



THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學

DEPARTMENT OF MECHANICAL ENGINEERING
機械工程學系

Department of
**MECHANICAL
ENGINEERING**

Annual Report 30 June 2014 to 1 July 2015

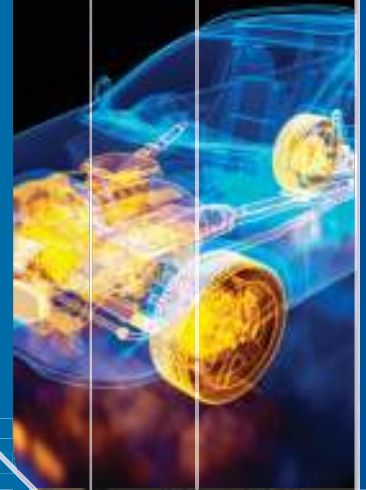


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Department of Mechanical Engineering

As one of the founding departments of The Hong Kong Polytechnic University since 1937, the Department of Mechanical Engineering has been the forerunner of the vast evolvement of its field. Over the years the Department has pioneered the rapid development in new energy system, transportation, health and biomedical systems and environment improvement.

Enhancing and maintaining excellent teaching quality has always been the major goal of the Department. With the elite teaching team, students will gain professionally recognized qualifications at different levels from the training of programmes offering by the Department, including Doctorates, Master Degrees, and Bachelor Degrees in Mechanical Engineering, and Product Analysis and Engineering Design.

Strategically emphasize on applied research, the Department firmly believes that research is an integral part of academic life. It informs teaching and advances the frontiers of knowledge and technology. The Department's efforts in research contribute to lifting the competitiveness of industry and to provide possible solutions towards a better living in Hong Kong and in the world.

The Department is famous for its international focus and actively encourages collaborations with overseas institutions. To foster international collaboration, the Department has been very active in inviting internationally well-known academic figures to participate as guest lecturers and in organizing international conferences. The Department has also published numerous research reports on world-renowned publications. The Department facilitates international exchange programmes for students through a strong network with various partner institutions all over the world and provides a platform for students to acquire global horizons and invaluable experiences in their university lives.

Vision

To achieve excellence in education and research in the discipline of mechanical engineering with global out-reach and impact.

Mission

To train future leaders, with creativity, broad vision, global outlook, and professional ethics for industry, academia, government and communities, who have sound knowledge in mechanical engineering with effective communication, analytical, and problem-solving skills.

To create knowledge and technologies through fundamental research and its applications in mechanical engineering, in order to serve the societal needs.

Research Areas

Aerospace Engineering and Aviation
Advanced Materials Technology
Combustion and Pollution Control

Fluid Structure Interactions
Integrated Product Development
Sound, Vibration and Structural Health Monitoring

Major Laboratories

Acoustics Laboratory
Aeronautical Laboratory
Computational Aeroacoustics and Flow Physics Laboratory
Corrosion and Surface Technology Laboratory
Design Analysis Center
Dynamics Laboratory
Fluid Mechanics Laboratory
Heat Transfer and Combustion Laboratory
Materials and Mechanics Technology Laboratory
Measurement and Control Laboratory

Nano- and Micro-Mechanics Laboratory
Nano-scale Energy Conversion Devices and Physics Laboratory
Product Testing & Analysis Centre
Smart Structures and Products Laboratory
Surface Nano-crystallization Laboratory
Thermal Science Laboratory
Thermodynamics Laboratory
Water Tunnel Laboratory
Wind Tunnel Laboratory

Message from Head



It has been a rewarding year since I was honored to take up the Headship of the Department of Mechanical Engineering in July 2014. As the result of the hard work and dedication of our productive staff members and innovative students, the Department has reached new heights of achievement from teaching, research and knowledge transfer to supporting the local industry and the community, strengthening our ties with alumni and reaching out for global impact.

Teaching and Learning

The student enrolment in both undergraduate and taught postgraduate programmes remained strong. In nurturing the young minds that will become competent professions, the Department sets out to expose our students to new experience that enrich their education and at the same time, provide them with opportunities to apply their professional knowledge through service learning and final year projects. The success of this approach can be seen in many students' achievements in external competitions and awards. We further provide advanced facilities and technological support for effective learning with the successful set up of two new laboratories, Materials and Mechanics Technology Laboratory, and Thermal Science Laboratory.

Striving for excellence in teaching and learning, faculty members incorporated forefront research and the latest development of engineering technologies into the lecture theatre, ensuring our programmes cover the most up-to-date knowledge that meets the changing needs of the community. Last year, our faculty member was granted an international education award to recognize his contributions to outcome-based education through integration of research and industrial activities for teaching. With the support from employers and alumni, a new departmental committee on learning outcome assessments has been established last year to evaluate and refine the undergraduate programme learning outcomes which are considered to be alongside the programme aims and industry's expectations.

The HKIE professional accreditation exercise for the 4-year undergraduate programmes was concluded. All our programmes have been successfully granted provisional accreditation until the full accreditation to be conducted when the first cohort of 4-year curriculum students graduate.

Research

Our Department had a stellar year in 2014/15, securing many research grants and honors. Of special note are the world class awards bestowed to our faculty the scientific achievement – The Frank Tiller Award for life-time contribution from American Filtration and Separations Society, and The 1st Place of the Dragon-STAR Innovation Award from European Union. One of our female faculty was also appointed as a Co-chairman of The Hong Kong Institute of Acoustics, Woman in Acoustics Committee which aims to recognize the contribution of women in acoustic profession.

The Department continued to strengthen its research profile with innovative work and enjoyed considerable growth and momentum in research productivity. In the latest rounds of research grants exercises, our research reputation is evidenced by the success in securing a number of external competitive funding: the RGC Collaborative Research Fund, two ECS projects, four GRF funded and fourteen fundable projects, two ITF projects, two research projects supported by Chinese state-key laboratories, and four Hong Kong Scholars projects with a total amount of more than HK\$ 10.7 million.

Members have been gaining remarkable visibility through their active participation in both local and international events. Last year, we have organized/co-organized series of symposiums and international conferences to pursue knowledge via interaction among the world's foremost scientists and scholars. To further elevate our research quality and academic standing, we invited top-notch scholars to serve as our visiting chair professors under the Distinguished Chair Professor Scheme.

To further cultivate the spirit of sharing and pursuit of knowledge, the Department held its first Research Poster Competition to provide the research postgraduate and research MSc students a platform to share their project findings and knowledge with their peers and the PolyU community.

Knowledge and Technology Transfer

It is our mission to create knowledge and technologies through fundamental research and its applications to serve the societal needs. The Department has made great efforts to transfer its knowledge discoveries to the community through numerous partnerships and collaborative venture with business and industry.

A commercialization and collaboration agreement was signed with a business venture to conduct research on the nanofibre technology platform and to develop the nanofiber face mask as a marketable product within a year. The joint-venture is a significant milestone in our engagement in collaborative research with the industry which maximizes the potential of technology development and the applicability of the new technology.

Our faculty has received Endowed Professorship in Product Design Engineering for his significant contributions to the community through setting up applied research projects to convert new technologies into innovative product ideas and a wide range of activities that strengthen the linkage between local industries and the University for the continuous advancement in the area of Product Design Engineering.

Other knowledge transfer activities, such as public lectures and dinner talks to professionals, were organized to raise community interest in the latest scientific and technological advancement.

Looking Ahead

There are certainly many challenges ahead of us. First and foremost is the merging the two full-time undergraduate programmes for optimization of programme management. ME has and will continue to play a major role in the development of new Faculty-based bachelor degree programme in Aviation Engineering which is ready for the first cohort of intake in September 2016.

Fitting with the growth of the department, we are recruiting new faculty members to join our vibrant group of scholars with wide range of research interests, such as in aviation, robotics and renewable energy. Efforts will also be made to promote the HK PhD Fellowship Scheme for recruiting high quality candidates internationally.

Looking ahead, we will continue to capitalize on our strengths in teaching, research, knowledge transfer and service to the community.

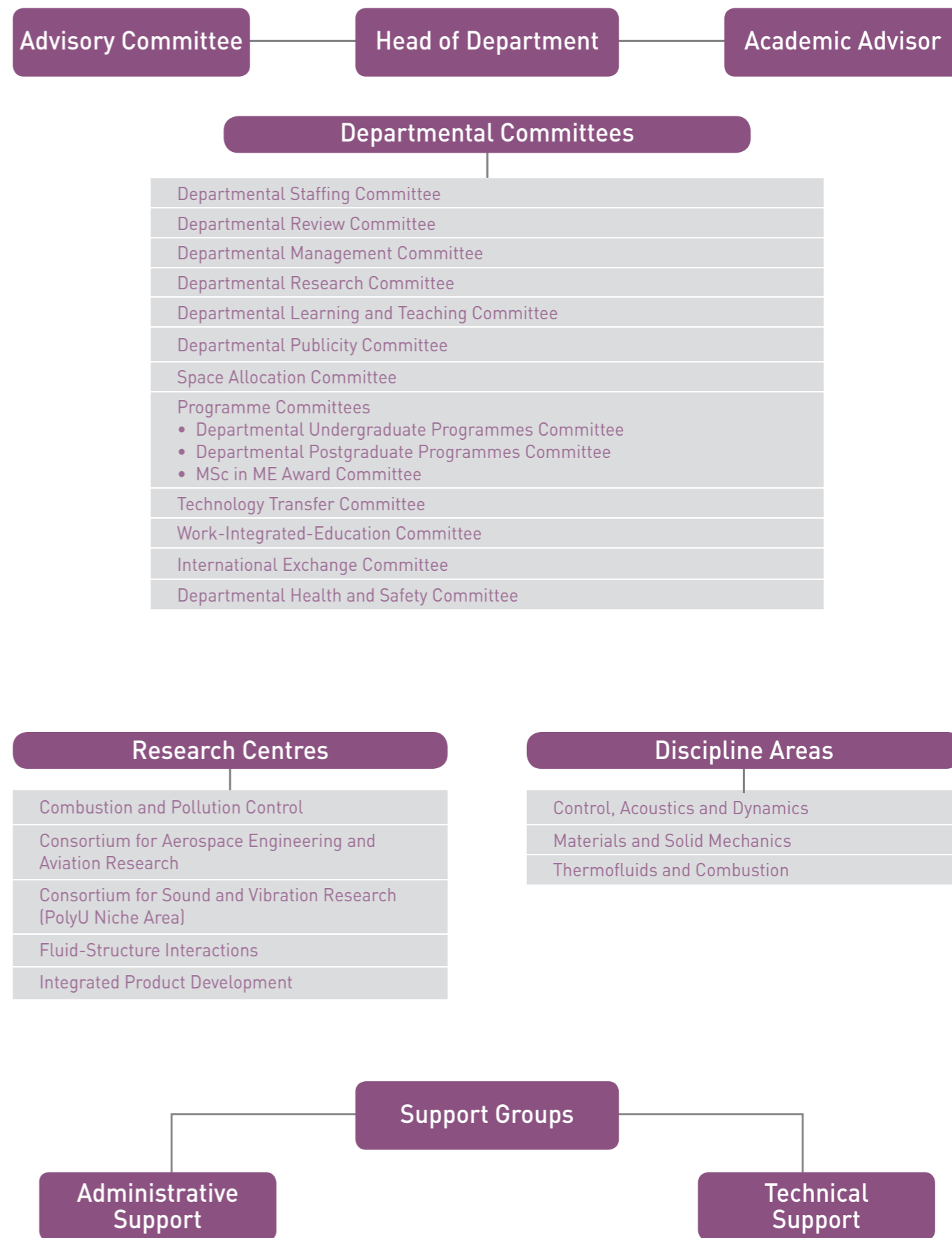
SQ Shi (Prof.)
Head
Department of Mechanical Engineering

Our People



Our professional and passionate staff members, under the support from Departmental Advisory Committee and Academic Advisors, play a vital role in the substantial contributions made both individually and collectively toward the continuous development of the Department, the University and the community.

Department Structure



Departmental Advisory Committee

Membership	Name	Position	Department/Company
Chairman	Ir Conrad Wong	Vice-Chairman	Yau Lee Group
Ex-officio	Prof. SQ Shi	Chair Professor & Head	Department of Mechanical Engineering The Hong Kong Polytechnic University
Ex-officio	Prof. HC Man	Dean	Faculty of Engineering The Hong Kong Polytechnic University
Member	Ir Darryl Chan Chun-Hoi	Head of Engineering	H K Dragon Airlines Limited
Member	Ir Ronald KW Cheng	General Manager	Technical and Engineering Services MTR Corporation Limited
Member	Ir Dr Angus HW Cheung	Chief Executive Officer	China Aircraft Services Limited (CASL)
Member	Prof. CS Cheung	Professor	Department of Mechanical Engineering The Hong Kong Polytechnic University
Member	Ir Mok Wai Chuen	Assistant Director	Environmental Protection Department HKSAR
Member	Mr. Patrick Y P Ng	Director, Engineering Group Operations	CLP Holdings Limited
Member	Mr. Alex Wong	Managing Director	King's Flair (Group) Development Limited
Member	Dr WO Wong	Associate Professor	Department of Mechanical Engineering The Hong Kong Polytechnic University
Member	Dr Daniel Yip	President	The Hong Kong Electrical Appliances Manufacture Association
		Managing Director	G.E.W Corporation Limited
Member	Mr. Andrew Young	Vice President, Marketing and Sales	Hong Kong Science and Technology Parks Corporation

Membership	Name	Position	Department/Company
Member	Prof. LM Zhou	Professor	Department of Mechanical Engineering The Hong Kong Polytechnic University
Overseas Member	Dr Cyrille Breard	Noise and Emission Manager	Commercial Aircraft of China Limited
Overseas Member	Prof. Jean-Louis Guyader	Professor	Laboratoire Vibrations Acoustique INSA de Lyon
Overseas Member	Prof. Vigor Yang	William R. T. Oakes Professor and Chair	School of Aerospace Engineering Georgia Institute of Technology
Student Representatives	Miss Gao Han	Full-time MSc Student	Department of Mechanical Engineering The Hong Kong Polytechnic University
Student Representatives	Miss Wong Tsz Ting, Isabel	Full-time PhD Studen	Department of Mechanical Engineering The Hong Kong Polytechnic University
Secretary	Ms. Lily Tam	Senior Executive Officer	Department of Mechanical Engineering The Hong Kong Polytechnic University
Assistant Secretary	Ms. Joanne Cheng	Executive Officer	Department of Mechanical Engineering The Hong Kong Polytechnic University

Academic Staff

Departmental Academic Advisor

Prof. Robert O. Ritchie (up to 31 Aug 2015)

H. T. & Jessie Chua Distinguished Professor of Engineering
Professor of Materials Science & Engineering
University of California, Berkeley
Professor of Mechanical Engineering
University of California, Berkeley

Prof. Teik Lim (from 1 Sept 2015)

Interim Dean, College of Engineering and Applied Science
Herman Schneider Professor of Mechanical Engineering
University of Cincinnati

Overseas Academic Advisor

Prof. Chung K. Law

Robert H. Goddard Professor
Department of Mechanical and Aerospace Engineering
Princeton University

Departmental Committee Chairman

Departmental Staffing Committee	Prof. SQ Shi
Departmental Review Committee	Prof. SQ Shi
Departmental Management Committee	Prof. SQ Shi
Departmental Research Committee	Prof. CY Wen
Departmental Learning and Teaching Committee	Prof. CW Leung
Departmental Publicity Committee	Prof. KT Lau
Space Allocation Committee	Prof. SQ Shi
Programme Committees	
• Departmental Undergraduate Programmes Committee	Prof. CW Leung
• Departmental Postgraduate Programmes Committee	Prof. LM Zhou
• MSc in ME Award Committee	Prof. LM Zhou
Technology Transfer Committee	Prof. WWF Leung
Work-Integrated-Education Committee	Prof. CS Cheung
International Exchange Committee	Dr MW Fu
Departmental Health and Safety Committee	Dr Y Liu
	Dr Curtis Ng

Research Centre Director

Combustion and Pollution Control	Prof. CW Leung
Consortium for Aerospace Engineering and Aviation Research	Prof. CY Wen
Consortium for Sound and Vibration Research	Prof. L Cheng
Fluid- Structure Interactions	Dr Y Liu (Acting)
Integrated Product Development	Prof. LM Zhou

Discipline Areas Group Leader

Control, Acoustics and Dynamics	Prof. L Cheng
Materials and Solid Mechanics	Prof. LM Zhou
Thermofluids and Combustion	Prof. WWF Leung

Head and Chair Professor of Mechanical Engineering

SHI Sangiang (Prof.)
石三強教授
BSc; MSc (USTB); PhD (McM); MMRS; MTMS; FHKIE

Surface/interface technology; Nuclear materials; Nanotechnology;
Environmental degradation of materials; Computer simulation of material
properties

Chair Professor of Mechanical Engineering

CHENG Li (Prof.)
成利教授
BSc (Xi'an Jiaotong Univ.); DEA; Ph.D. (INSA, Lyon, France);
FASA; FASC; FHKIE; FIMechE

Noise and vibration control; Fluid-structure interaction; Damage detection
and smart material/structure/products

Chair Professor of Innovative Products & Technologies

LEUNG Woon Fong Wallace (Prof.)
梁煥方教授
BSc(Cornell University); MSME(MIT); ScD(MIT); FASME, FAICHE,
FAFS, FHKIE; Senior Member of AIAA; Member of ACS;
USA Representative of International Delegation on Filtration

Product innovation, research and development; Physicochemical
hydrodynamics; Turbine blade cooling; Nanofiber technologies for health
(wound healing), environment (Filtration of nano-aerosols and Purification
of gaseous pollutants by photocatalysis; Water purification), and renewable
energy (Photovoltaics: Dye Sensitized Solar Cells, Perovskite solar cells);
Separation & filtration technologies; Biotechnology separation; Membrane
separation and processes; Rheology of semi-fluids or semi-solids; Water
and wastewater treatment; Centrifugal separation technologies; Rotational
microfluidics for micro-reactor, cell culture and cell lysis, and heat transfer
in microchannels; Interactive rehabilitation robotic system; Clinical decision
support system; Cancer biomarker discovery

Visiting Chair Professor of Engineering Science under the Distinguished Chair Professor Scheme

Adrian BEJAN (Prof.)
BSc (MIT); MSc (MIT); PhD (MIT); HonMemASME;
Academy of Europe

Thermodynamics; Heat Transfer; Constructal Law of Evolution in Nature

Visiting Chair Professor of Mechanical Engineering under the Distinguished Chair Professor Scheme

CHENG Ping (Prof.)
鄭平教授
B.S., Mech. Engg. (Oklahoma State University);
M.S., Mech. Engg. (M.I.T.); Ph.D., Aeronautics & Astronautics
(Stanford University)

Microscale Heat Transfer; Porous Media Heat Transfer; Mesoscale
Simulation of Transport Phenomena; and Radiative Gasdynamics

Visiting Chair Professor of Engineering

Sylvie LORENTE (Prof.)
BSc, MSc, PhD

Vascularized materials; Constructal Theory; Fluid Mechanics; Porous
media; Heat and mass transfer

President of PolyU and Chair Professor of Mechanical Engineering

TONG Timothy W. (Prof.)
唐偉章教授
BSc; MSc; PhD; FASME; FHKEng; JP

High performance computing of radiative heat transfer; Heat transfer in
porous media; Energy conservation; Thermal insulation systems; Thermal
control of aerospace systems; Thermal radiation; Heat transfer in fuel cells

Professor Emeritus

SO Ming Cho Ronald (Prof.)
蘇銘祖教授
BSc(Hons); MEng; MA; PhD; DSc; Hon DEng; FWIF; FIMechE;
FASME; MIAA; FRAeS; FAIAA

Turbulence modeling; Fluid-structure interaction; Flow-induced vibration;
Direct aeroacoustics simulation; Lattice Boltzmann-type equation

Associate Head and Professor

LEUNG Chun Wah (Prof.) 梁振華教授 BSc (CNAAC); MSc (Cran IT); PhD (CNAAC); CEng; RPE; FHKIE; FIMarEST; FIMechE; MCIBSE	Heat transfer; Fuel and combustion; Internal combustion engine emissions and their control
WEN Chih-Yung (Prof.) 溫志湧教授 BEng (National Taiwan University); MSc (Caltech, U.S.A.); PhD (Caltech, U.S.A.); AFAIAA	Aerodynamics of hypersonic vehicles; UAV/MAV; Active flow control; CFD Simulation of Urban Environment; Magnetic fluid flows; Fuel cell technologies

Professor

CHEUNG Chun Shun (Prof.) 張鎮順教授 BSc; MSc (HKU); PhD (HK PolyU); CEng; RPE; MHKIE; MIMarEST	Internal combustion engine; Engine emissions
LAU Kin Tak Alan (Prof.) 劉建德教授 BEng; MEng (RMIT); PhD (HK PolyU); CEng; CPEng; RPE; FIEAust; FIMechE; FIMMM; FIED; FHKIE; FRAeS	Advanced Composites; Aviation Engineering; Aeronautical Engineering; Product Engineering Design
ZHOU Limin (Prof.) 周利民教授 BEng; MEng (Harbin); PhD (Syd)	Electrospun nanofibers/nanotubes for energy storages; Dye/quantum-dot sensitized solar cells; Recyclable and reusable high performance structural composites; Functional composites; Structure health monitoring technology

Associate Professor

CHAN Tat Leung (Dr) 陳達良博士 BSME; MSME; PhD; Ir; Eur Ing; CEng; P.E.(Wis, USA); FIMechE; FHKIE; FSAE; SrMCMES; MASME; MASHRAE	Multiphase and multi-component complex systems with micro- and nanoscale; Transport and formation of nano/microparticles and gaseous pollutants; On-road vehicle emission measurement, control and modelling techniques; Environmental/Aerosol science & technology; Engine combustion & emissions formation; Thermal-fluids science & engineering
CHOY Yat Sze (Dr) 蔡逸思博士 BEng; PhD (HK PolyU); MIOA	Sound induced vibration; Duct noise control; Building and room acoustics; Environmental noise measurement and control; Aeroacoustics; Sound Sources identification; Sound quality of product and its assessment; Soundscape study, planning and design
FU Ming Wang (Dr) 傅銘旺博士 BEng; MEng (Xi'an Northwestern PolyU); PhD (National Univ. of Singapore)	Product design and development; CAD and CAE; Manufacturing technologies; Nano-processing of bulk materials and micro-realization of micro product/systems
JING Xingjian (Dr) 景興建博士 Bsci (Zhejiang Univ.); PhD/MEng (CAS); PhD (Univ. of Sheffield)	Frequency domain methods for nonlinear systems; Nonlinear system identification and signal processing; Nonlinear sound and vibration control; Robust learning/control methods; Intelligent computing and optimization; Robotics
LEUNG Chi Kin Randolph (Dr) 梁志堅博士 PhD; Senior MAIAA; MASME; MIED; MIOA; MHKIE; MHKIOA	Computational aeroacoustics and gas dynamics; Wind turbine aerodynamics; Flow-induced sound and structural vibration; Aviation science; HVAC compressor and system design; Product sound and vibration quality
LIU Yang (Dr) 劉陽博士 BSc (UST, China); MPhil (Beijing Inst of Chem Tech); PhD (Syd); MHKIE	Biomechanics; CFD; Flow-induced vibration and thermal management
SU Zhong Qing (Dr) 蘇眾慶博士 BSc (BUAA); MEng (BUAA); PhD (Syd..)	Structural Health Monitoring (SHM); Non-destructive Evaluation (NDE); Elastic wave propagation; Smart materials & structures; Sensors & sensor networks; Digital signal processing & data fusion; Vibration & noise control; Advanced composite materials

WONG Wai On (Dr) 黃偉安博士 BEng; MSc; PhD (HK PolyU); MIMechE; CEng; MHKIE	Laser diagnostics; Structural dynamics; Signal processing
ZHENG Guang Ping (Dr) 鄭廣平博士 BS., MS. (Sun Yat-sen University); Ph.D. (Johns Hopkins University)	Computational materials science (multiscale methods: first-principles, molecular dynamics and phase- field modeling and simulations); Syntheses and applications of functional nanomaterials

Visiting Associate Professor

FUNG Hoi Kwun Eric (Dr) 馮海堃博士 BSc; PhD (HKU); CEng; RPE; MHKIE; MIMechE; FinstM&C	Dynamics and control; Industrial automation and mechatronics; Intelligent systems; Precision measurement; Robotics
WONG Tsun Tat Eric (Dr) 黃俊達博士 MSc (Lough); PhD (Leics); CEng; RPE; FRAeS; MIMechE; MHKIE; CMILT; FHKQMA	Civil aviation operations and safety; Airport engineering and hazard assessment; Air transport logistics; Aircraft engineering education and training; Marine technology; Quality management of Picture Archiving and Communications System

Assistant Professor

CHU Kar Hang Henry (Dr) 朱嘉行博士 BASc (University of Waterloo); MASc and PhD (University of Toronto)	Robotic manipulation; Vision-based control and automation; Micro-system design and Tissue engineering
RUAN Haihui (Dr) 阮海輝博士 PhD (HKUST)	Solid mechanics; Plasticity; Constitutive modeling; Amorphous materials; Nanomaterials; Impact; Collision and crashworthiness
TANG Hui (Dr) 唐輝博士 BEng, MEng (Tsinghua University); PhD (University of Manchester)	Aerodynamics; Hydrodynamics; Active flow control; Fluid-structure interaction; Multiphase flow
YAO Haimin (Dr) 姚海民博士 BEng, MEng (Tsinghua University); Dr.rer.nat.(Universität Stuttgart)	Bio-inspired mechanics and materials; Nanomechanics; Contact mechanics; Mechanical characterizations of biomaterials
ZHANG Peng (Dr) 張鵬博士 BSc (USTC); MSc (IMCAS); PhD (Princeton)	Theoretical and numerical combustion; Chemical kinetics; Droplet dynamics; Rarefied gas dynamics
ZHU Jie (Dr) 祝捷博士 BSc, MSc (Nanjing University); PhD (The Pennsylvania State University)	Structured acoustic materials and metamaterials; Acoustic imaging technology and system; Piezoelectric material and acoustic transducers; Experimental acoustics.

Teaching Fellow

TAM Wai Yin Eunice (Dr) 譚慧賢博士 BEng (HK PolyU); MEng (HK PolyU); PhD (UNO)	Composite and application; Composite manufacturing; Nanocomposite (carbon nanotube/polymer) structure
TONG Yu Chee (Dr) 唐宇池博士 BEng (RMIT); Ph.D. (Syd.)	Structural risk and reliability methods; Fatigue and fracture mechanics; Aircraft structures
Anand VYAS (Dr) 阿倫韋華斯博士 BSc; MSc (R.D.V, India); MPhil (HKU); PhD (CityU HK)	Thin film; Nanomaterials materials; Materials characterization; Hard multilayer coatings and their mechanical & tribological properties; High temperature superconductivity

Temporary Full Time Teaching Fellow

KAHANGAMAGE Udaya (Dr) BSc.Eng (SL); PhD (Uni. of Bristol, UK)	Product design and manufacturing; Risk analysis in early conceptual design; Productivity improvement in manufacturing systems; Cleaner Production; Development of appropriate technology for developing world
LAM Chun Ki (Dr) 林俊祺博士 BEng; PhD (HK PolyU); MION; MASME; MSAE; MIET	Advanced composite structures; Materials characterization; Nanoclay/polymer composites; Nanotechnology, On-road gaseous and particle emissions measurement
NG Tin Yau Ernest (Dr) 吳天佑博士 Civil Dip. (NAIT); Mech Dip. (NAIT); BEng; MASc; PhD (UVic)	Micromechanics; Computational Solid Mechanics; Multi-Scale Modeling of Hybrid Composites
YUEN Da Wai David (Dr) 袁大偉博士 BSc (Eng); MPhil (H.K.); MBA (C.U.H.K.); PhD [PolyU (H.K.)] MemACM; MemASME; MemIEEE	Mechatronics; Computational intelligence; Computer vision; Product design
ZHANG Yu Fiona (Dr) 章瑜博士 BEng (SJTU); MEng (NUS); PhD (UCR)	Nanostructured biomaterials for tissue engineering and drug delivery; Biomedical applications of nanomaterials; Advanced microscopy characterization on nanomaterials and nano-bio interface; Integrated micro/nanosensing devices

Senior Instructor

TANG Elsa (Ms) 鄧慧芳 BEng (Liverpool, UK); MSc (Liverpool, UK); MSc (HKU)	Computer aided design; Computer aided engineering; Product design and management; Basic scientific computing; Supply chain management
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Administrative Support Staff

TAM Man Yee, Lily (Ms)	Leader, Senior Executive Officer
WAN CHENG Lai Ying, Lily (Mrs)	Executive Officer II
WONG Yuet Man, Celia (Ms)	Assistant Marketing Manager
CHENG Sze Ting, Joanne (Ms)	Executive Officer
YUEN Man Hei, Hilary (Miss)	Executive Assistant
CHAN Bik Ki, Packy (Ms)	Clerical Officer II
LAI CHAN Sin Fan, Michelle (Mrs)	Clerical Officer II
NGAI Oi Ling, Irene (Miss)	Clerical Officer II
WONG Sin Hing, Merlin (Ms)	Clerical Officer II
WONG Kam Yan (Ms)	Clerk

Technical Support Staff

NG Chun (Dr)	Technical Support Group Leader
CHAN Hau Tsang, Raymond	Scientific Officer II
CHAN Tak Ming	Scientific Officer
LEUNG Chi Kuen Benny	Technical Officer
NG Chun Hung Stephen (Dr)	Technical Officer
TSANG Kwong Shing	Technical Officer
WONG Kwok Wai	Technical Officer
YUEN Ka On	Technical Officer
TANG Kam Keung	Technician
TSE Kwai Wa	Assistant Scientific Officer
MAN Ka Fung	Assistant Technical Officer
WOO Wai Chiu	Senior Artisan
MO Chi Wai	Artisan
SHUM Kin Kwok	Artisan



Research Personnel

Senior Research Fellow (Full-time)

LI Feng-ming (Dr) 李鳳明
PhD, Harbin Inst of Tech, China

Research Fellow (Full-time)

LU Hang-jun (Dr) 陸杭軍
PhD, Chinese Academy of Sciences, China

YUAN Li-bo (Dr) 苑立波
PhD, The Hong Kong Polytechnic University

Research Fellow (Part-time)

CHEUNG Yan Lung (Dr) 張人龍
PhD, The Hong Kong Polytechnic University

LIU Yang, Antony (Dr) 劉洋
PhD, The Hong Kong Polytechnic University

ZHEN Hai-sheng (Dr) 甄海生
PhD, The Hong Kong Polytechnic University

Postdoctoral Fellow (Full-time)

HO Mei Po, Mabel (Dr) 何美寶
PhD, The University of Southern Queensland, Australia

JI Hong-li (Dr) 季宏麗
PhD, Nanjing University of Aeronautics and Astronautics, China

LAM Chi Yan, Garret (Dr) 林志欣
PhD, The Hong Kong Polytechnic University

LI Wei-kang (Dr) 李維康
PhD, Ecole Centrale Paris, France

LIANG Shi-jing (Dr) 梁詩景
PhD, Fuzhou University, China

LIU Wen-bo (Dr) 劉文博
PhD, Sichuan University, China

NING Yong-quan (Dr) 寧永權
PhD, Northwestern Polytechnical University, China

QIU Lei (Dr) 邱雷
PhD, Nanjing University of Aeronautics and Astronautics, China

XU Hao (Dr) 徐浩
PhD, The Hong Kong Polytechnic University

YANG Li-jun, Sherry (Dr) 楊麗軍
PhD, The Hong Kong Polytechnic University

ZHANG Ying-chao (Dr) 張英朝
PhD, Jilin University, China

Research Associate (Full-time)

CHEN Shui-liang (Dr) 陳水亮
PhD, Philipps-Universität Marburg, Germany

CHEN Yu-ming (Dr) 陳育明
PhD, The Hong Kong Polytechnic University

FEI Cheng-wei (Dr) 費成巍
PhD, Beijing University of Aeronautics and Astronautics, China

FU Jin (Dr) 付瑾
PhD, Xi'an Jiaotong University, China

LIANG Wen-yan (Dr) 梁文彥
PhD, Harbin Engineering University, China

LIU Chun-chuan (Dr) 劉春川
PhD, Harbin Inst of Tech, China

MENG Bao (Dr) 孟寶
PhD, Beihang University, China

PEI Chun (Dr) 裴純
PhD, The Hong Kong Polytechnic University

SHEN Hua (Dr) 申華
PhD, Peking University, China

WANG Jing-chuan (Dr) 王勁川
PhD, The Hong Kong Polytechnic University

YANG Cheng (Dr) 楊程
PhD, The Hong Kong Polytechnic University

ZHANG Li-dong (Dr) 張李東
PhD, Nanjing University, China

ZHANG Su (Dr) 張肅
PhD, Southeast University, China

ZHENG Xiu-cheng (Dr) 鄭修成
PhD, Nankai University, China

ZHOU Kun (Dr) 周錕
PhD, Zhejiang University, China

Research Associate (Part-time)

JIANG Hao (Dr) 姜昊
PhD, The Hong Kong Polytechnic University

XIAO Zhi-hua (Dr) 肖知華
PhD, The Hong Kong Polytechnic University

Research Assistant (Full-time)

BIAN Jing 邊菁
MEng, Tongji University, China

CHEN Xiao-ting 陳霄婷
Bachelor, Doaghua University, China

CHEN Yi-sheng 陳一晟
BEng, The Hong Kong Polytechnic University

DENG Yu-jun 鄧宇君
MEng, Shanghai Jiaotong University, China

DU Fei-peng 杜飛鵬
BS, Shanghai University for Sci and Tech, China

GUAN Chun 關淳
BEng, Shanghai Jiaotong University, China

HAN Zhuo 韓卓
Bachelor, Guizhou University, China

JUAN Yu-hsuan 阮於軒
MSc, National Taipei University of Technology, Taiwan

KUANG You-di (Dr) 匡友弟
PhD, Huazhong University of Sci and Tech, China

LI Hai-bao 李海寶
MS, Dalian University of Tech, China

LI Quan-kun 李全坤
Master, Northwestern Polytechnical University, China

LI Xin-ming 李新明
MEng, Tsinghua University, China

LI Yun 李雲
MEng, South China Normal University, China

LIU Hui-jie 劉慧潔
Bachelor, China Jiliang University, China

LIU Liang (Dr) 劉亮
PhD, Qufu Normal University, China

LIU Ming-hui (Dr) 劉明輝
PhD, Harbin Inst of Tech, China

LIU Peng-chuang 劉朋闖
MPhil, China Academy of Engineering Physics

LU Xi 盧羲
BSc, The Hong Kong Polytechnic University

MAN Xing-jia 滿興家
Bachelor, Xian Jiaotong University, China

NIE Zheng-wen 聶政文
Bachelor, Northwestern University

NING Han-wen (Dr) 寧瀚文
PhD, Huazhong University of Sci and Tech, China

PAN Hui-hui 潘惠惠
MSc, Harbin Inst of Tech, China

RAN Jia-qi 冉家琪
MSc, The Hong Kong Polytechnic University

SHAO Jia-cun 邵家存
BEng, China Jiliang University, China

SHAO Jing 邵靖
Bachelor, Huazhong University of Sci and Tech, China

SUN Jing-xuan 孫靖萱
MSc, The Hong Kong Polytechnic University

SUN Kai 孫凱
BEng, Wuhan U of Tech, China

TANG Jing-jing 唐晶晶
BEng, Central South University, China

WANG Bing-han 王柄涵
MSc, The Hong Kong Polytechnic University

WANG Li-xian 汪利先
BSc, Huazhong University of Sci & Tech, China

WANG Song 王松
MSc, The Hong Kong Polytechnic University

WANG Yun 王贊
MEng, University of Chinese Academy Science, China

WU Bing 吳兵
BEng, China University of Petroleum

XU Zhu-tian 徐竹田
Master, Shanghai Jiaotong University, China

YANG He 楊賀
MEng, Harbin Inst of Tech, China

YANG Qing 楊清
BA, The Central South University

YU Hoi Fai 余凱暉
MPhil, The Hong Kong Polytechnic University

YUE Yan 岳言
BEng, China Jiliang University, China

ZHANG Bing-fu (Dr) 張炳夫
PhD, The Hong Kong Polytechnic University

ZHANG Chao 張超
BEng, Nanjing University of Aeronautics and Astronautics, China

ZHANG Ji-feng (Dr) 章繼峰
PhD, Harbin Inst of Tech, China

ZHENG Yan (Dr) 鄭燕
PhD, City University of Hong Kong

ZHOU Yan 周龔
Master, Jiangxi Normal University, China

Project Fellow (Full-time)

MA Song-qi (Dr) 馬松琪
PhD, Chinese Academy of Sciences, China

Project Associate (Full-time)

LAU Mei Ling (Dr) 劉美玲
PhD, The University of Southern Queensland, Australia

WONG Mei Kwan 黃美筠
BEng, The Hong Kong Polytechnic University

ZHAO Jia-quan (Dr) 趙家權
PhD, Dalian University of Tech, China

Intern (Full-time)

LAM Yat Ken 林日健
BEng, City University of Hong Kong

LI Ka Hin 李嘉軒
BEng, The Hong Kong Polytechnic University

LIN Xiao-bin 林小斌
MSc, City University of Hong Kong

UY Chun Kit 黃駿傑
Bachelor, The Hong Kong University of Sci and Tech

YAO Senna 姚森娜
MSc, The Hong Kong Polytechnic University

ZHANG Ye-tong 張業彤
MSc, The Hong Kong Polytechnic University

PhD Student (Full-time)

CHAN Yui Ho 陳銳豪
BEng, The Hong Kong Polytechnic University

CHEN Kai-guo 陳開果
MEng, Chinese Academy of Engineering Physics, China

CHEUNG Ka Po 張嘉寶
MEng, University of Salford, UK

CHIANG Yan Kei 蔣欣岐
BEng, The Hong Kong Polytechnic University

FAN Ka Heng 範嘉興
BEng, The Hong Kong Polytechnic University

FU Ji-min 傅濟民
BEng, Zhejiang University, China

HE Chong 何衝
BS, Sun Yat-sen University, China

HONG Ming 洪銘
BSc, Lafayette College, US

HU Jing 胡菁
MEng, Central South University, China

JIANG Zhi-yuan 蔣志遠
MSc, The Hong Kong Polytechnic University

LAM Ka Hei 林家熙
BEng, The Hong Kong Polytechnic University

LAM King Cheong 林景昌
MPhil, The University of Hong Kong

LI Fang-fang 李芳芳
BEng, Tongji University, China

LI Nana 李娜娜
MSc, University of Alberta, Canada

LI Qian 李倩
PhD, Tongji University, China

LI Wei-qun 李衛群
MSc, The Hong Kong Polytechnic University

LI Xiao-yan 李小燕
MSc, Fujian Normal University, China

LI Ye-hai 李葉海
MEng, Nanjing University of Aeronautics and Astronautics, China

LIU Meng-long 劉夢龍
MEng, Nanjing University of Aeronautics and Astronautics, China

LIU Qiang 劉強
MEng, Harbin Inst of Tech, China

LIU Shu-yuan 劉殊遠
MEng, University of Chinese Academy of Sciences, China

LIU Tuo 劉拓
MSc, China University of Petroleum, China

LO Kin Shing, Kenneth 盧健誠
BS, Colorado School of Mines, US

LU Ming-zhen 路明臻
MEng, Jiangsu University, China

MA Hei Lam 馬曦嵐
BEng, The Hong Kong Polytechnic University

MAK Yi Wah, Eva 麥沺華
MSc, Washington University in Saint Louis, US

MIAO Jing 繆婧
BEng, The Hong Kong Polytechnic University

QADRI Muhammad Nafees Mumtaz
MSc, National University of Sci and Tech, Pakistan

RADECKI, Rafai Zbigniew
MSc, AGH University of Science and Technology, Poland

RAN Jia-qi 冉家琪
MSc, The Hong Kong Polytechnic University

SALDIVAR, Heriberto
MSc, National Cheng Kung University, Taiwan

SEID Ka Him 薛家謙
MEng, University of Salford, UK

SHEN Lu 沈路
MSc, The Hong Kong Polytechnic University

SHI Li-song 時立松
MSc, The Hong Kong Polytechnic University

SUN Bo 孫博
BEng, Tongji University, China

SUN Jing-xuan 孫靖萱
MSc, The Hong Kong Polytechnic University

SUN Xiu-ting 孫秀婷
BEng, Tongji University, China

TANG Li-ling 唐利玲
MEng, Xi'an Jiaotong University, China

WAN Jian-quan 萬建全
MEng, Shanghai University, China

WANG Hong 王紅
Master, Shenzhen University, China

WANG Ji-lai 王繼來
MSc, The Hong Kong Polytechnic University

WANG Kai 王凱
MEng, Beihang University, China

WANG Shu 王庶
MSc, Peking University, China

WANG Song 王松
MSc, The Hong Kong Polytechnic University

WANG Tian-gang 王天罡
MEng, China Academy of Space Technology

WANG Zhi-bo 王志博
MEng, Huazhong University of Sci and Tech, China

WEI Zhi-long 衛之龍
MEng, Xi'an Jiaotong University, China

WONG Tsz Ting 黃芷亭
BEng, The Hong Kong Polytechnic University

WU Di 吳迪
MEng, Northwestern Polytechnical University, China

WU Zhi-jing 吳志靜
MEng, Harbin Inst of Tech, China

XI Qiang 席強
BEng, The Hong Kong Polytechnic University

XIAO Lan-lan 肖蘭蘭
BEng, Yanshan University, China

XIAO Zhen-long 肖珍龍
MEng, Beijing University of Posts and Telecommunications, China

YIN Qi-fang 殷其放
MEng, Chinese Academy of Sciences, China

YU De-hai 于德海
MSc, University of Chinese Academy of Sciences, China

YU Xiang 余翔
BEng, The Hong Kong Polytechnic University

ZHANG Bing-fu 張炳夫
MEng, Dalian University of Tech, China

ZHANG Da-wei 張大尉
BEng, China University of Petroleum, China

ZHANG Hao 張浩 MSc, The Hong Kong Polytechnic University

ZHANG Pei 張培
MEng, Northwestern Polytechnical University, China

ZHANG Zhen 張振
BEng, Tongji University, China

ZHOU Jian-hao 周健豪
MEng, Jiansu University, China

ZHU Xu-ren 朱旭仁
MEng, Huazhong University of Sci and Tech, China

ZIAJA, Aleksandra
MSc, AGH University of Science and Technology, Poland

PhD Student (Part-time)

CHAN Ying Ngai 陳英毅
MSc, The University of Hong Kong

CHEN Yu-ming 陳育明
MSc, Fujian Normal University, China

LAM Cheuk Yi, Tracy 林卓怡
MPhil, City University of Hong Kong

LEUNG Wing Yan, Maggie 梁詠欣
MPhil, The Hong Kong Polytechnic University

LO Chun Kong 盧鎮江
MPhil, The Hong Kong University of Sci and Tech

PEI Chun 裴純
MSc, The Hong Kong Polytechnic University

WONG Yin Wai 黃燕威
BEng, The Hong Kong Polytechnic University

MPhil Student (Full-time)

CHOY Hung Faat 蔡鴻發
BEng, The Hong Kong Polytechnic University

HAO Ming-jun 郝明君
MEng, Shanghai University, China

HAU Wing Yi, Cruie 侯詠怡
BEng, The Hong Kong Polytechnic University

YANG Hao-peng 楊昊澎
BEng, The Hong Kong Polytechnic University

MPhil Student (Part-time)

LAM Yat Ken 林日健
BEng, City University of Hong Kong

YU Hoi Fai 余凱暉
BEng, The Hong Kong Polytechnic University

Staff Movement (1 July 2014 – 30 June 2015)

Staff Promotion

Dr YS Choy was promoted to Associate Professor
Dr GP Zheng was promoted to Associate Professor

New Appointment

Dr H Tang, Assistant Professor
Dr J Zhu, Assistant Professor
Miss Hilary Yuen, Executive Assistant
Mr CK Leung, Technical Officer

Honours & Awards (1 July 2014 – 30 June 2015)

Dr CHOY Yat Sze

- Faculty of Engineering Research Grant Achievement Award (2013/2014)

Prof. LEUNG Woon Fong Wallace

- The Frank Tiller Award 2015, The American Filtration & Separations Society (AFS), US

Prof. LAU Kin Tak Alan

- Award for Outstanding Contribution to Education, 2014 Global Learn Tech Congress & Awards, Mumbai

Dr SU Zhong Qing

- 1st Place of The Dragon-STAR Innovation Award 2015, European Union, Brussel

Professional Services

Prof. SHI Sanqiang

- Session Chair, 23rd International Conference on Nuclear Engineering, 17-20 May 2015, Makuhari Messe, Chiba, Japan
- Member of International Organizing Committee, The 3rd International Symposium on Phase-field Method, 26-29 August 2014, State College, Pennsylvania, USA

Prof. CHENG Li

- Vice-president, Hong Kong Society of Theoretical and Applied Mechanics
- Advisor, The AMSS-PolyU Joint Research Institute for Engineering and Management Mathematics
- Member, The Panel on Engineering and Science, The University of Macau
- Member, The Noise Control Appeal Board Panel, Secretary for the Environment, HKSAR
- Member, The Noise Technical Briefing Group, Airport Authority Hong Kong
- Member, Expert Panel, Automotive Parts and Accessory Systems R&D Centre
- Designated General Chair, 46th International Congress on Noise Control Engineering (Inter-noise 2017), 27-30 August, 2017, Hong Kong
- Technical Area Chair, 23rd International Conference on Noise and Fluctuation (ICNF 2015), 2-6 June 2015, Xi'an, China
- Technical Chair, The 4th International Conference on Mechatronics and Applied Mechanics ICMAM2014, 17-18 December 2014, Shenzhen
- General Chair, The 4th East Asia Mechanical And Aerospace Engineering Workshop, 24-25 October 2014, Hong Kong

Prof. LAU Alan Kin Tak

- Member, University Grant Committee (UGC) Teaching Award Committee
- Accreditation Board member, The Hong Kong Institution of Engineers (HKIE)
- International Vice President and Trustee Board member, The Institution of Mechanical Engineers (IMechE)
- Professional Review Panel, The Hong Kong Green Building Council (HKGBC)
- Committee, The Hong Kong Electrical Appliance Industries Association
- Member, The Sustainable Development Policy Board of the Hong Kong Aircraft Engineering Company Limited (HAECO).
- Independent Non-executive Director, King's Flair International (Holdings) Limited
- School Manager, Wa Ying College

Prof. LEUNG Wallace Woon Fong

- RGC, Engineering Panel Member (specialize in Mechanical & Environmental)

Prof. ZHOU Limin

- RGC, Engineering Panel Member
- Vice President: Chinese Society for Composite Materials

Prof. WEN Chih-Yung

- Member, The International Scientific Committee, 3rd Symposium on Fluid-Structure- Sound Interactions and Control (FSSIC2015), 5-9 July 2015, Perth, Australia
- Conference Co-Chair, 2nd International Conference on Mechanical, Electronics and Computer Engineering (CMECE-II 2015, 24-26 January 2015, Zhuhai, China
- Workshop Co-Chair, The 4th East Asia Mechanical and Aerospace Engineering Workshop, 24-25 October 2014, Hong Kong
- Member, International Advisory Committee, 30th International Symposium on Shock Waves, 19-24 July 2015, Tel Aviv, Israel

Dr CHAN Tat Leung

- Honorary Chair: Society of Automotive Engineers (SAE) International- Hong Kong
- Faculty Advisor: The first SAE International- Hong Kong Student Collegiate Club at HKPolyU (Appointed by the Headquarter of SAE International, USA)

Dr CHOY Yat Sze

- Co-Chairman, HKIOA Women in Acoustics

Dr FU Ming Wang

- Advisory Board Member, The International Journal of Advanced Manufacturing Technology

Dr LEUNG Randolph Chi Kin

- Section Chair, American Society of Mechanical Engineers – Hong Kong Section

Dr SU Zhong Qing

- Steering Committee Member, European Workshop on Structural Health Monitoring (EWSHM)
- Scientific Committee Member, Asia-Pacific Workshop on Structural Health Monitoring (APWSHM)
- International Scientific Member, Nondestructive Monitoring and Diagnosis of American Society of Mechanical Engineers (ASME)
- Member, Organizing Committee of SPIE Series on Smart Structures/NDE

Dr WONG Eric Tsun Tat

- HKIE Aircraft Discipline Advisory Panel Member
- HKIE Education & Examinations Committee Member

Fellowship

Prof. SHI Sanqiang

- Fellow of The Hong Kong Institution of Engineers (FHKIE)

Prof. CHENG Li

- Fellow of Acoustical Society of America (FASA)
- Fellow of Acoustical Society of China (FASC)
- Fellow of The Hong Kong Institution of Engineers (FHKIE)
- Fellow of The Institution of Mechanical Engineers (FIMechE)

Prof. LEUNG Woon Fong Wallace

- Fellow of American Society of Mechanical Engineers (FASME)
- Fellow of American Institute of Chemical Engineers (FAICHE)
- Fellow of The Hong Kong Institution of Engineers (FHKIE)
- Fellow of American Filtration & Separations Society (FAFS)

Prof. LEUNG Chun Wah

- Fellow of The Hong Kong Institution of Engineers (FHKIE)
- Fellow of Institute of Marine Engineering (FIMarEST)
- Fellow of The Institution of Mechanical Engineers (FIMechE)

Prof. LAU Alan Kin Tak

- Fellow of The Royal Aeronautical Society (FRAeS)
- Fellow of The Institution of Engineers, Australia (FIEAust)
- Fellow of The Institution of Mechanical Engineers (FIMechE)
- Fellow of The Institute of Materials, Minerals and Mining (FIMMM)
- Fellow of The Institute of Engineering Designers (FIED)
- Fellow of The Hong Kong Institution of Engineers (FHKIE)

Prof. WEN Chih-Yung

- Associate Fellow of The American Institute of Aeronautics and Astronautics (AFAIAA)
- Fellow of The Hong Kong Institution of Engineers (FHKIE)

Dr CHAN Tat Leung

- Fellow of The Hong Kong Institution of Engineers (FHKIE)
- Fellow of The Institution of Mechanical Engineers (FIMechE)

Dr FUNG Hoi Kwun Eric

- Fellow of The Institute of Measurement and Control (FInstMC)

Dr WONG Tsun Tat Eric

- Fellow of Royal Aeronautical Society (FRAeS)
- Fellow of The Hong Kong Quality Management Association

Journal Editorship

Prof. SHI Sanqiang

- Associate Editor: Science of Advanced Materials, American Scientific Publishers
- Associate Editor: Journal of Nanoscience and Nanotechnology, American Scientific Publishers
- Associate Editor: Journal of Computational and Theoretical Nanoscience, American Scientific Publishers
- Editorial Board Member: International Journal of Minerals, Metallurgy and Materials, Elsevier

Prof. CHENG Li

- Associate Editor: The Journal of the Acoustical Society of America, IOP publishing
- Associate Editor: Structural Health Monitoring, An international Journal. SAGE Ltd. Science
- Editorial Board Member: International Journal of Applied Mechanics, Imperial College Press
- Editorial Board Member: Book series in MATLAB Applications in Engineering and Technology, Springer Verlag GmbH
- Editorial Board Member: International Journal of Mechanics and Solids
- Editorial Board Member: International Journal of Dynamics of Fluids
- Editorial Board Member: ACTA ACUSTICA SINICA
- Editorial Board Member: Chinese Journal of Acoustics

Prof. LEUNG Woon Fong Wallace

- Editorial Board Member: J. of Separation and Purification Technology, Elsevier

Prof. LAU Alan Kin Tak

- Editor: Advanced Materials Research, Trans Tech Publications
- Associate Editor: Nanomaterials, Hindawi Publisher
- Associate Editor: Structural Health Monitoring, SAGA Publications
- Associate Editor: International Journal of Smart and Nano Materials, Taylor & Francis

Prof. WEN Chih-Yung

- Editor: Shock Waves - An International Journal on Shock Waves, Detonations and Explosions
- Associate Editor: The American Institute of Aeronautics and Astronautics (AIAA) Journal

Dr CHAN Tat Leung

- Editor: Aerosol and Air Quality Research, Taiwan Association for Aerosol Research
- Editor (Mechanical Discipline) of The Hong Kong Institution of Engineers (HKIE) Transactions
- Editorial Advisory Board Member: Automotive Engineering International (Chinese Edition) (Editorial Partner: Society of Automotive Engineers (SAE) International, USA), SAE International in cooperation with Ringer Trade Media Ltd.

Dr FU Ming Wang

- Regional Editor (North-Asia) of the Int. J. of Computer Aided Engineering and Technology, Interscience Publisher
- Editorial Board member, The International Journal of Advanced Manufacturing Technology, Springer
- Editorial board member, Chinese Journal of Mechanical Engineering-English, Springer
- Editorial board member, Chinese Journal of Mechanical Engineering-Chinese, Springer
- Editorial board member, International Journal of Metals, Hindawi Publishing Corporation

Dr LEUNG Chi Kin Randolph

- Associate Editor in Chief: Journal of Technical Acoustics
- Editorial Board Member: Engineering Applications of Computational Fluid Mechanics
- Editorial Board Member: Advances and Applications in Fluid Mechanics

Dr SU Zhong Qing

- Associate Editor: Structural Engineering and Mechanics, Techno-Press
- Associate Editor: Coupled Systems Mechanics, Techno-Press

Dr WONG Wai On

- Associate Editor: The Hong Kong Institution of Engineers (HKIE) Transactions
- Editorial Board Member: The Scientific World Journal, Hindawi Publishing Corporation
- Editorial Board Member: ISRN Mechanical Engineering, Hindawi Publishing Corporation
- Editorial Board Member: The International Journal of Mechanical Systems Engineering, American V-King Scientific Publishing

Dr JING Xingjian

- Editorial Board Member: The Scientific World Journal, Hindawi Publishing Corporation
- Editorial Board Member: International Journal of Mechanic Systems Engineering, American V-King Scientific Publishing
- Editorial Board Member: Modern Mechanical Engineering, Scientific Research Publishing Inc., Scientific Research Publishing Inc.

Distinguished Lecture / Keynote Speech at International Conference / Symposium**Prof. SHI Sanqiang**

- "Quantitative phase-field model of microstructure evolution for binary alloys", 5th East Asia Mechanical and Aerospace Engineering Workshop, 27-31 May 2015, Seoul, South Korea

Prof. CHENG Li

- "On-going Research on Sound and Vibration", 2015 Annual Conference of Shanghai Society of Mechanics and 11th Shanghai-Hong Kong Forum on Mechanics and Its Application, 19 June 2015, Wu Xi, China
- "A pseudo-Excitation Approach for Structural Damage Detection", International Conference on Universality of Non-Classical Approaches in Mechatronics- from Physics to Smart Structures, 27-28 April 2015, Krakow, Poland
- "Airframe Vibration and Aircraft Cabin Noise Control", 4th International Conference on Mechatronics and Applied Mechanics (ICMAM2014), 17-18 December 2014, Shenzhen, China
- "Design and Optimization of Sound Absorption Using MPP", 2014 Forum on Vibration and Noise Control of Equipment, 21-23 November 2014, Changsha, China
- "Coping with the Emerging Demand in Aerospace Industry", The 4th East Asia Mechanical And Aerospace Engineering Workshop, 24-25 October 2014, Hong Kong
- "Micro-perforates for Noise Control in Vibroacoustic Systems", 3rd International Symposium and Workshop on Acoustics and Vibration (ISWAV 2014), 18-22 July 2014, Hangzhou, China

Prof. LEUNG Wallace Woon-Fong

- "Nanofiber filter technologies for removing fine and submicron aerosols and added functions", China International Filtration Summit Forum and Exhibition, 14-17 April 2014, Beijing, China

Prof. LAU Kin Tak Alan

- "Space Composites Research", The 2nd International Conference and Exhibition on Mechanical & Aerospace Engineering, 08-10 September 2014, Philadelphia, USA
- "Industry-engaged Outcome-based Education", The 4th International Conference on Education & e-Learning, 25-26 August 2014, Bangkok, Thailand
- "Cross-disciplinary Projects for OBE for Engineering Programmes", Education Forum "Outcome-based Engineering Education", University of Southern Queensland, 21-22 June 2014, Queensland, Australia

Prof. WEN Chih-Yung

- "Numerical Simulation of Ionized Hypersonic Flows using the Space-Time CE/SE Method", LiangAn-SanDi Workshop on Shocks and Complex Flows, 4-6 April 2015, Jiangxi, China
- "Improvement of Space-Time Conservation Element and Solution Element Schemes on Quadrilateral and Triangular Meshes", 2015 2nd International Conference on Mechanical, Electronics and Computer Engineering (CMECE-II 2015), sponsored by SAISE (SOUTH ASIA BRANCH OF SCIENCE AND ENGINEERING INSTITUTE), 24-26 January 2015, Zhuhai, China
- "A theoretical model for predicting the shock stand-off distance of hypersonic flow over a sphere", The Seventh Across-Strait Workshop on Shock/Vortex Interaction, 23-28 June 2014, Tamshui, Taiwan

Dr CHOY Yat Sze

- "Visual-aural effect on soundscape design in residences", The joint HKIOA-HKPolyU One day Symposium Soundscape – Sharing a better acoustical environment for Hong Kong, 30 September 2014, Hong Kong

Dr SU Zhong Qing

- "Guided wave-based in-situ structural health monitoring for high-speed train bogie systems", The 2nd International Conference on Structural Health Monitoring and Integrity Management (ICSHMIM-2014), 24-26 September 2014, Nanjing, China
- "Damage identification using guided waves: from linear to nonlinear, from macroscopic to mesoscopic, from distributed to dispersed sensing", Workshop on Health Monitoring of Offshore Wind Farms (HEMOW), 26 September 2014, Nanjing, China

TEACHING & LEARNING



At ME Department, education is not only imparting knowledge and skills with excellent teaching quality but also nurturing all-round future leaders with creativity, global outlook and professional attributes by providing a holistic and fruitful learning experience.

Enhancing and maintaining excellent teaching quality has always been the major goal of the Department. The Department takes every effort to continuously improve teaching and learning performance to ensure the knowledge and skills students learnt in classrooms are up-to-date and applicable in real life.

Programmes Offered

The Department offers Doctorates, Master Degrees, and Bachelor Degrees. Students gain professionally recognized qualifications at different levels from the vibrant teaching and learning approach.

Undergraduate Programmes

Programme Title	Mode of Study
BEng(Hons) in Mechanical Engineering	Full-time (UGC funded)
BEng(Hons) in Product Analysis and Engineering Design	Full-time (UGC funded)
BEng(Hons) in Mechanical Engineering	Part-time (Self-financed)
BEng(Hons) in Product Analysis and Engineering Design	Part-time (Self-financed)

Postgraduate Programmes

Programme Title	Mode of Study
MSc in Mechanical Engineering Four specialisms: • MSc in Mechanical Engineering (Product Development and Analysis) • MSc in Mechanical Engineering (Air/Noise Pollution Management) • MSc in Mechanical Engineering (Aeronautical Engineering) • MSc in Mechanical Engineering (Aviation)	Mixed-mode (Self-financed)
MSc in Automotive Engineering Design	Mixed-mode (Self-financed)
Engineering Doctorate	Mixed-mode (Self-financed)

Performance Indicators

Student Enrollment

Programme	Year 1 Intake	Total no. of Students in 2014/2015
3-year Curriculum Full-time BEng(Hons) in Mechanical Engineering (including Double Degree students)	N/A	123
4-year Curriculum Full-time BEng(Hons) in Mechanical Engineering (including Double Degree students)	52	220
3-year Curriculum Full-time BEng(Hons) in Product Analysis and Engineering Design	N/A	58
4-year Curriculum Full-time BEng(Hons) in Product Analysis and Engineering Design	26	96
Part-time BEng(Hons) in Mechanical Engineering	80	276
Part-time BEng(Hons) in Product Analysis and Engineering Design	50	183
MSc/PgD in Mechanical Engineering	81	152
MSc in Automotive Engineering Design	37	44
Part-time Engineering Doctorate	N/A	3
	Total	1155

Student Feedback Questionnaire (SFQ)

The student feedback questionnaires provide one of the major indicators to assess the effectiveness of teaching.

Item	ME Average	FENG Average
Subjects		
Clear understanding of what I am expected to learn	4.0	3.8
Teaching & learning activities helped me to achieve the subject learning outcomes	4.0	3.8
Assessments require demonstration of knowledge/skills/understanding of subject	4.0	3.9
Able to understand the criteria for grading	4.0	3.8
Staff		
Willing to provide help when necessary	4.1	3.9
Motivated me to learn	4.1	3.9
Given me/the class feedback for improvement	4.0	3.8
Subject contents organised logically and clearly	4.1	3.9
Enabled me to relate the knowledge taught to my professional career	4.0	3.9
Overall view about the teaching of the staff member		
Provided me with a valuable learning experience	4.0	3.8
Overall, staff member is an effective teacher	4.1	3.9
Grand mean of item on Overall View	4.0	3.9

Student Exchange Programme

With strong commitment to cultivate global outlook, the Department offers student exchange opportunities to enhance students' cultural knowledge, languages skills and personal development. Every year, the Department arranges students to go on exchanges while outstanding students from the mainland and overseas are also recruited to its academic programmes.



Inbound statistics

University	Country	No. of students
Aston University Birmingham	United Kingdom	2
BeiHang University	China	2
Case Western Reserve University	United States	1
Dublin Institute of Technology	Ireland	5
Fudan University	China	1
Hanze University of Applied Sciences	Netherlands	1
Hochschule Konstanz University of Applied Sciences	Germany	3
McGill University	Canada	1
Nanyang Technological University	Singapore	1
National University of Singapore	Singapore	8
North Carolina State University	United States	1
Shanghai Jiao Tong University	China	2
Technical University of Denmark	Denmark	3
The Catholic University of America	United States	5
Tongji University	China	1
University of Nevada, Reno	United States	2
University of Technology of Troyes	France	4
University of Waterloo	Canada	1
Xi'an Jiaotong University	China	1
	Total	45



Outbound statistics

University	Country	No. of students
Dublin Institute of Technology	Ireland	4
Fudan University	China	1
Hochschule Konstanz University of Applied Sciences	Germany	3
Management Center Innsbruck	Austria	2
McGill University	Canada	1
Nanyang Technological University	Singapore	1
National University of Singapore	Singapore	1
Tampere University of Technology	Finland	1
Technical University of Denmark	Denmark	1
University of Technology of Troyes	France	1
Total		16



Work-Integrated Education (WIE)

To echo with the University's Work-Integrated Education (WIE) programme, the Department has established a close partnership with both local and overseas industrial / educational partners to offer a wide variety of placement opportunities to students who are always encouraged to acquire real world working experience before graduation.

Overseas Placement

Organization	Country
China Resources (Holdings) Company Limited 華潤置地前海有限公司	China
Dynamic Structures Limited	China
Graduate School of Engineering, Tohoku University	Japan
Hydron Unipress Limited	Poland
Key to Metals	Serbia
Know How Transfer Limited	Thailand
Labour Co-operative ARMATURA Limited	Poland
Landcom Medical	China
Qianhai Development & Investment Holding Company Limited	China
Qihoo 360 (Beijing)	China
Safe Reach (SRH)	China
Sultan Qaboos University	Oman
The Boeing Company	USA
Universiti Brunei Darussalam	Brunei
上海電氣集團	China

Local Placement

Organization
Alexander Dennis (Asia Pacific) Limited
Analogue Group of Companies
ASM Technology Hong Kong Limited
BYME Engineering (H.K.) Limited
Bissell Asia Development Centre Company Limited
Brighten Engineering Company Limited
Cathay Pacific Airways
China Aircraft Services Limited
CLP Power Hong Kong Limited
CO2nnsulting Limited
Complete Solutions International Limited
Cosmosupplylab Limited
Cummins Hong Kong Limited

Dracaena Life Technologies Company Limited
EMOI Lifestyle Company Limited
Enrich Full Limited
Fong's National Engineering Company Limited
Fukutomi Company Limited
G.E.W International Corporation Limited
H.K. Steel Limited
Hong Kong Air Cargo Terminals Limited (Hactl)
Hong Kong Aircraft Engineering Company Limited
Hong Kong Alzheimer's Disease Association
Hong Kong RDIF Limited
In-Tech electronic Limited
Intertek Testing Services Hong Kong Limited
ITE Smartcard Solutions Limited
Jardine Engineering Corporation
King's Flair Development Limited
Konstar Industries Limited
May Cheong Group
Mitsubishi
Modern Testing Services
Ove Arup & Partners Hong Kong Limited
PIE Ozonation(Hong Kong) Limited
REC Engineering Company Limited
Region Fine (HK) Limited
RF Tech Limited
Shui Wo Cleaning Services Company
Siemens Limited
The China Engineers, Limited (CEL)
The Hong Kong Polytechnic University - ITC Department
The Hong Kong Polytechnic University - Mechanical Engineering Department
Theme Production House Limited
UVTECH
Wilson Acoustic Limited
Wings Product Workshop Limited
Wings Trading (HK)Company Limited
Yick Shun Electronic Toys Manufactory Limited
YKK Hong Kong Limited

IAESTE (Summer Training Exchange Programme)

To nurture students to become all-round global citizens, apart from WIE activities locally, students are also encouraged to take up internships in other parts of the world, while the Department welcomes students from overseas institutions to stay and work in the Department.

Inbound

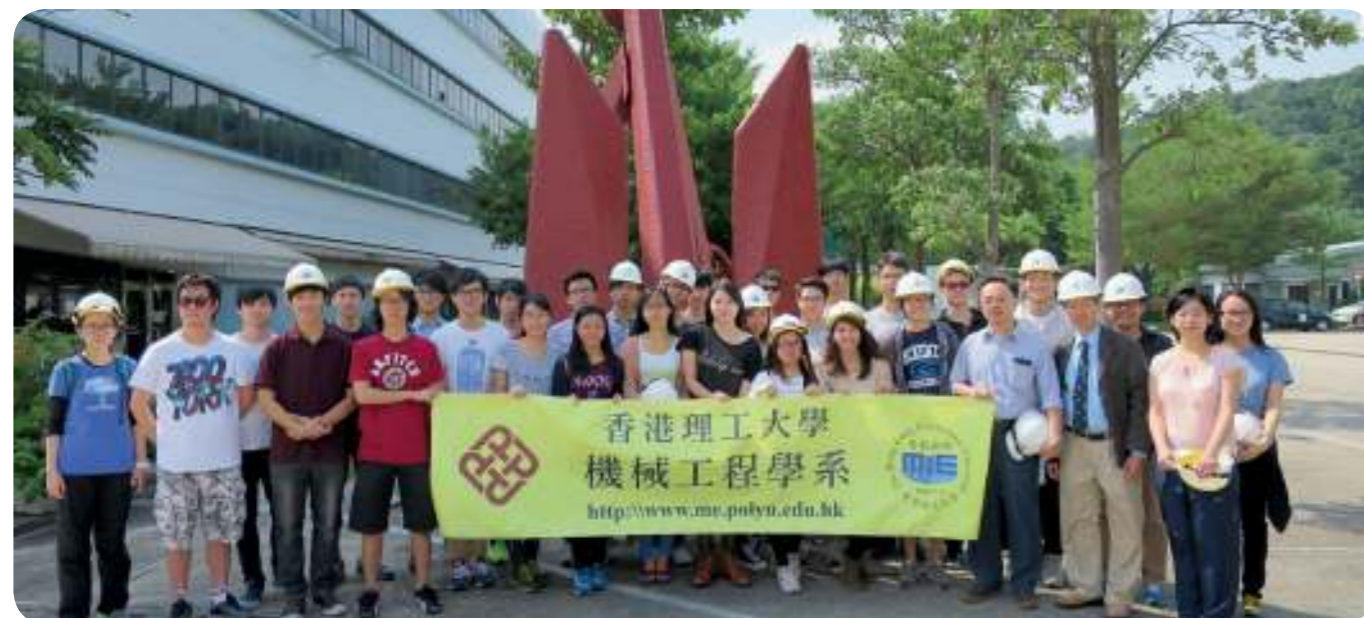
Student Name	Institute	Country
Bert DE CONINCK	Ghent University	Belgium
Luka CULIC	University of Zagreb	Croatia
Dennis GALLUN	University of Technology Hamburg	Germany
Faisal Hamed Mohammed AL DHAWYANI	Sultan Qaboos University	Oman
Ibrahim Khalaf AL ABRI	Sultan Qaboos University	Oman
Robert Jakub RYBARZ	AGH University of Science and Technology	Poland
Stefan CIRJAKOVIC	University of Belgrade	Serbia
Vaclav KLEMENT	University of Zilina	Slovakia
Pablo Soler Esteve	Universidad Miguel Hernandez	Spain
Marnoch Liam HAMILTON JONES	Heriot-Watt University	UK

Outbound

Country Exchanged	Employer
Poland	Labour Co-operative ARAMATURA Limited
Thailand	Know-How Transfer Co. Limited
Poland	Hydron Unipress Limited
Oman	Sultan Qaboos University
Thailand	Know-How Transfer Company Limited
UK	Newcastle University
Serbia	KEY TO METALS

Technical Visits to Local Industries

The Department arranged the following visits to local industries for the students:



Date	Local Industry
21/10/14	Lamma Power Station
28/10/14	Government Dockyard, Marine Department
04/11/14	Ngong Ping 360
25/11/14	The Hong Kong and China Gas Company Limited
14/01/15	Ngong Ping 360
28/01/15	MTR, Kowloon Bay Depot
11/02/15	Hong Kong United Dockyard Limited
11/03/15	KMB
08/04/15	CLP



Mentorship Programme

The Department continued to run the Mentorship Programme aiming at building a caring and supportive relationship between PolyU alumni, partners and friends of PolyU (as mentors) and undergraduates (as mentees) to achieve the following objectives:

- To facilitate the educational, social and personal growth of mentees
- To develop mentees' fullest potential, vision and aspirations for the future
- To enhance mentees' future professional and career development
- To help groom mentees to become preferred graduates
- To empower mentees to face challenges in society

During the last year, 72 alumni of the Department were invited to share their experience and advice to 180 final year students. A dinner gathering was held on 16 January 2015 to provide a communication platform for mentors and mentees in a relaxing setting.



The Dean's Honours List

The following ME students have satisfied the criteria for being included in the Dean's Honours List in the academic year 2014/2015.

Honours Degree Programme

CHAN Chong Shun	CHIU Chi Yan	LIT Hong Tat	TANG Ka Kei
CHAN Hon Ting	CHUNG Lai Chun	LUI Pak Yin	TANG Tsz Ho
CHAN Hong Wah	GU Wenhao	MA Ho Yan	TONG Ka Chun
CHAN Lok Chun	HO Wai Ip	MA Man Kit	TSANG Sau Ping
CHAN Ming Ki	HOU Ruoyang	MA Mengran	TSANG Tsz Fung
CHAN Nga Man	JI Yuan	MA Zixin	TSE Chung Sing
CHAN Pak Kwong	KO Chi Leung	MAK Hiu Yan	TSE Tin Yau David
CHAN Siu Chung	KO Man Kit	MAN Kit Edmond	TSUI Chi Man
CHEN Hanshen	KWOK Ling In	NG Ming To	TUNG Lai Kei
CHEN Runyi	LAM Ka Ling	NG Wai Wa	WONG Tsz Chung
CHENG Hon Yan Roy	LAO Chun Kit	NGAI Tsz Kit	WU Sin Ying
CHENG Tai Wa	LAU Tsz Kin	SADLI William	YEUNG Chun Yan
CHEUK Wing Pan Andy	LEE Ka Hei	SHIU Tsz Yan	YEUNG Kin Hei
CHEUNG Lek Ka	LEUNG Chun Ho	SOO Chak Yin	YOU Yuqi
CHING Wai Kiu	LI Wing Kei Vickie	TAI Yongchen	ZHANG Chuqian

Prizes, Scholarships and Bursaries

Prizes and scholarships are honors, and serve to motivate and recognize the performance and contributions of students. Bursaries provide assistance to needy students so that they can concentrate on their studies.

Awards	Recipients
Fong's Industrial Prize	CHAN Cheuk Hang (FT BEng) CHAN Tsz Chiu, Richard (PT BEng) FUNG King Kei (PT BEng) LAI Jason Poh Hwa (FT BEng) LAI Ka Kui (FT BEng) MAN Kit Edmond (FT BEng) TANG Hin Leuk (FT BEng) WONG Wing Nam (PT BEng) YONG Kim Yan (FT BEng)
Scholarships	Recipients
A & P Scholarship	LEUNG Yue Tong (FT BEng) MA Man Kit (FT BEng) TANG Tsz Ho (FT BEng)
Chiang Chen Industrial Charity Foundation Scholarship	CHAN Lok Chun (FT BEng)
Chiang Chen Overseas Exchange Scholarship	HO Kam Shing (FT BEng)
Cobelco Industrial Supplies Ltd. Scholarship	LEE Hoi Fu (FT BEng)
Commercial Radio 50th Anniversary Scholarship	CHEN Mufan (FT BEng)
Department of Mechanical Engineering Scholarship for Hall Residents	ALI Moazzam (FT BEng) CHAN Kit Ying (FT BEng) CHEN Mufan (FT BEng) GU Wenhao (FT BEng) HOU Ruoyang (FT BEng) LAI Jason Poh Hwa (FT BEng) LAW Man Cheong (FT BEng) LIN Qizhi (FT BEng) NG Ming To (FT BEng) WONG Hoi Ching (FT BEng) YUEN Kwok Ho (FT BEng) ZHANG Yiming (FT BEng)
Dr. Y.K. Ching Memorial Scholarship	ZHOU Yuhuan (FT BEng)
Faculty of Engineering Scholarship for Hall Residents	CHIU Ka Yu (FT BEng) SIT Yuen Man (FT BEng) TSANG Chee Fung (FT BEng)
Gigi AU-YEUNG Chi Ting Scholarship	LAM Wai Chung (FT BEng)
HAESL Scholarship	CHAN Chong Shun (FT BEng) LAW Man Cheong (FT BEng) MA Man Kit (FT BEng) SHIU Tsz Yan (FT BEng) TANG Tsz Ho (FT BEng)
Hang Seng Bank Community Service Scholarship	CHAU Tsz Him (FT BEng)

HKAUW Postgraduate Scholarship	LI Wenting (FT MSc)
HKCC Scholarship	AU Yat Laam Aaron (FT BEng) AU-YEUNG Ling Fung (FT BEng) CHAN Nga Man (PT BEng) CHU Kwok Hoi (FT BEng) KWOK Yu Fung (FT BEng) KWONG Wang Fung (FT BEng) NG Ming To (FT BEng) WONG Man Fai (PT BEng)
HKSAR Government Scholarship	CHEN Mufan (FT BEng) GU Wenhao (FT BEng) LAW Chun Fai (FT BEng) LI Haohan (FT BEng) LING Wudao (FT BEng) TSANG Sau Ping (FT BEng) YOU Yuqi (FT BEng) ZHANG Chuqian (FT BEng) KO Man Kit (FT BEng)
HKSAR Government Scholarship Fund - Endeavour Merit Award	CHU Kwok Hoi (FT BEng)
HKSAR Government Scholarship Fund - Reaching Out Award	ALI Jahan Zaib (FT BEng) CHAN Wing Yee (FT BEng) GU Wenhao (FT BEng) HUI Yuk Lin Tina (FT BEng) LEE Ho Tin (FT BEng) LI Haohan (FT BEng) LIN Ka Yan (FT BEng) SHIU Tsz Yan (FT BEng) ZHANG Kedi (FT BEng) ZHANG Yiming (FT BEng)
HKSAR Government Scholarship Fund - Talent Development Scholarship	CHAN Wing Yee (FT BEng) CHAU Hei Tung (FT BEng) CHEN Mufan (FT BEng) LAM Wai Chung (FT BEng) LI Chak Hong (FT BEng) LI Cheuk Shun (FT BEng) TSANG Tsz Fung (FT BEng) TSE Wai Yin (FT BEng)
Hong Kong Mediation and Arbitration Centre Scholarship	CHAN Hon Ting (FT BEng) TSANG Tsz Fung (FT BEng)
Lam Sze Ming Scholarship	ALI Moazzam (FT BEng) GU Wenhao (FT BEng) ZHANG Chuqian (FT BEng)

Outstanding Student Award, Department of Mechanical Engineering, 2014	TSANG Tsz Fung (FT BEng)
Postgraduate Scheme in Engineering Type I Scholarship	CHEN Qinxue (FT MSc) DANG Moran (FT MSc) FAN Peng (FT MSc) GAO Han (FT MSc) LAM Yat Fung (FT MSc) LI Wenting (FT MSc) LU Bo (FT MSc) TSANG Sze Ting (FT MSc) WANG Yun (FT MSc) ZHANG Yanan (FT MSc)
Postgraduate Scheme in Engineering Type II Scholarship	FUNG Hin Wing Henry (PT MSc)
President Emeritus Professor Poon Chung-kwong Scholarship	CHEN Mufan (FT BEng)
REC Engineering Company Limited Scholarship	CHAN Chong Shun (FT BEng) CHAN Lok Chun (FT BEng)
Rexroth 4EE Scholarship	CHAN Yui Ching (FT BEng) IP Valerius Wing Hon (FT BEng) KWOK Fu Shing (FT BEng) LAI Chi Wai (FT BEng) LAU Man Fai (FT BEng) LAU Wing Hong (FT BEng) LAW Chun Fai (FT BEng) LIU Ka Hei (FT BEng) LO Lok Chun (FT BEng) NG Cho Kin (FT BEng) NG Kam Suen (FT BEng) TSANG Kit Ying (FT BEng) TSANG Tsz Fung (FT BEng) TSE Wai Yin (FT BEng) WAN Hiu Fung (FT BEng) WONG Chi Fai (FT BEng) WONG Man Fai (FT BEng)
Simatelex Charitable Foundation Scholarship	CHAN Chong Shun (FT BEng) KO Man Kit (FT BEng) LIN Miaoling (FT BEng)
The C I Stapleton Scholarship	AU Yat Laam Aaron (FT BEng) LO Kan Mo Bryan (FT BEng)
The Hong Kong & Kowloon Engineering Employers Association Limited Scholarship	KWAN Chi Hung (FT BEng) LAW Man Cheong (FT BEng) TSE Tin Yau David (FT BEng) YEUNG Chun Yan (FT BEng)

The Hong Kong Polytechnic University Entry Scholarship (Academic)	LAI Jason Poh Hwa (FT BEng) SADLI William (FT BEng) CHEN Yen-yu (FT BEng) ALI Moazzam (FT BEng) SUN Yixiao (FT BEng)
The Hong Kong Polytechnic University Non-local Students Scholarship (Academic)	JING Mingyuan (FT BEng)
The Hongkong Electric Co. Ltd. Scholarship	LAM Ka Ling (FT BEng)
University Scholarship for Hall Residents	LAM Tsun Fung (FT BEng) LAW Man Cheong (FT BEng) LEUNG Ho Yan (FT BEng) NG Ming To (FT BEng) POON Ho Fai (FT BEng) TANG Tsz Chung (FT BEng) TONG Hiu Fai (FT BEng) TSANG Chee Fung (FT BEng) WONG Sze Wing (FT BEng)
Wong Tit-shing Overseas Exchange Scholarship	CHAN Wing Yee (FT BEng)
Bursary	
Chiap Hua Cheng's Foundation Bursary	
Delong Bursary	
Freetech Technology Bursary	
K.K. Chow Bursary	
Mr Yip Wai Ming Bursary	
Ng Wing Hong Bursary	

Student Achievements

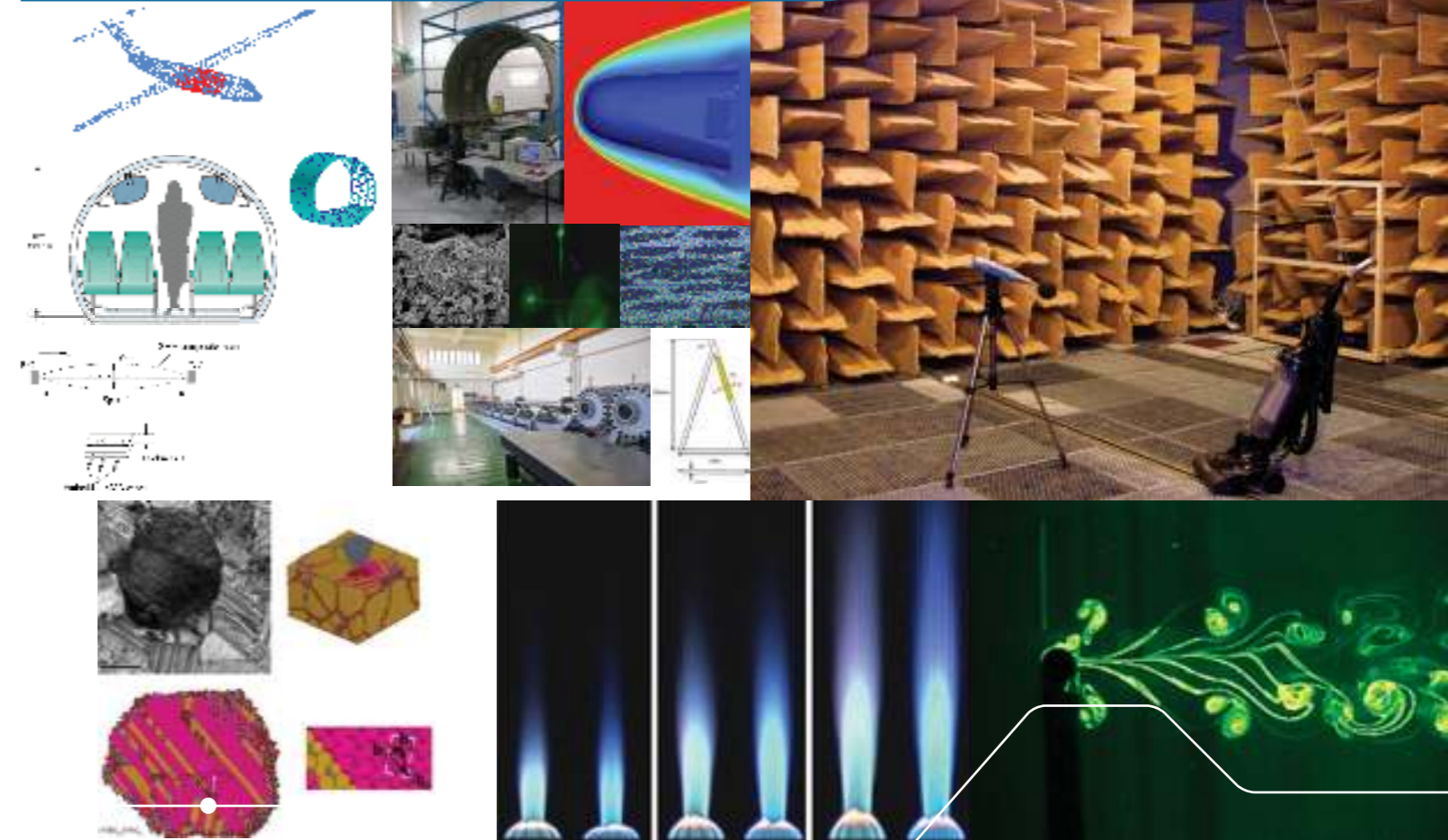
To maintain the competitiveness of students, the Department has been encouraging its students to actively participate in a wide range of local and international activities and competitions in order to showcase their talents and creativity as well as to build up their skills and confidence.

In the reporting year, ME students shined in many international and national competitions and awards. Their accomplishments offer concrete proof that the Department has succeeded in nurturing students who not only excel in academic areas, but also demonstrate great leadership and problem-solving skills.

Competition	Award Received
The International Collegiate Design and Innovation Competition	1st Prize (Spaceflight Category)
The China Youth Science and Technology Innovation Award	The China Youth Science and Technology Innovation Award
The 5th Unilever-RSC International Symposium on Functional Materials Science	Poster Prize
Red Dot Design Award: Product Design 2014	Winner The Honorable Mention Award
2013-2014 Best Final Year Energy Project Competition	Winner
The 4th IMechE Greater China Design Competition	1st Runner-up
The 19th Annual Conference of The Hong Kong Society of Theoretical and Applied Mechanics (HKSTAM)	Best Student Presentation Awards
2015 Taiwan Innovative Unmanned Aircraft Vehicle (UAV) Design Competition	Second Runner-up (Navigated Flight Category)



RESEARCH & CONSULTANCY



The Department continues to push the frontiers of knowledge and applications in the discipline of Mechanical Engineering. With the spirit of driving innovation for a better future, members of the Department are playing a significant role in making high-impact contributions to the profession by engaging in fundamental and applied research development; high level consultancies for local and international organizations; and provision of knowledge and technologies to the industry.

Research Centres

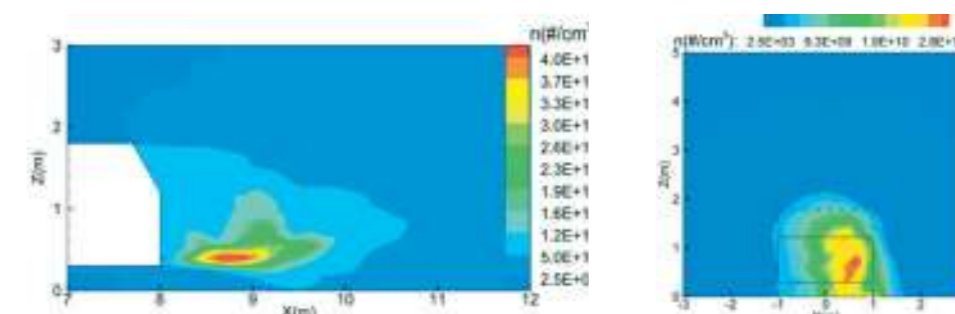
With different objectives and targets, the Department aims at all-rounded research efforts that could provide possible solutions towards a better living for the human race. In order to establish better synergy in research, four research areas and one niche area where a critical mass of experts is available in each have been identified.



Research Centre for Combustion and Pollution Control (CPC)

Currently, the CPC Research Centre is operated smoothly with collaborative effort from the key members: Prof. CW Leung, Prof. WF Leung, Prof. CS Cheung, Dr. TL Chan and Dr. P Zhang, to deal with combustion-led air pollution problems. We are one of the leading research groups in the areas of flames and combustion, alternative fuels, internal combustion engine emissions and nano-technology for air pollution control. Some of the ongoing research projects are shown below. Because of our excellent efforts in serving the industry, The Hong Kong Polytechnic University (PolyU) is recognized to be one of the leading institutions in dealing with combustion-led air pollution problems in Hong Kong and the Pearl River Delta region. The CPC Research Centre has made significant contribution to the development of new curriculum and new subjects for the Department/University, and has provided many very good research and undergraduate projects for our students. Excellent research outputs: patents, book chapters, journal publications and conference presentations are made by the key members of the Research Centre to enhance the image of PolyU.

Solving Complex Aerosol-related Problems with Novel Model Scheme



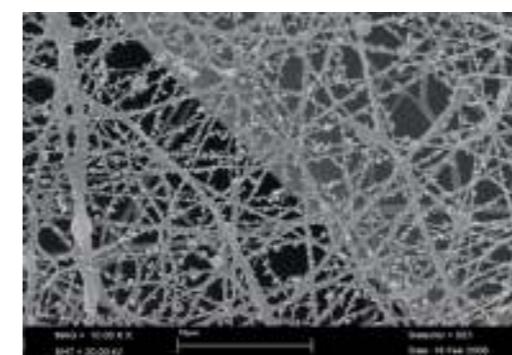
Hydrogen Enrichment aided Combustion



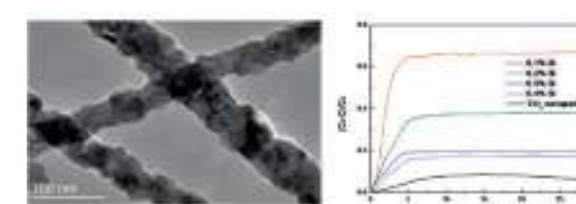
Burner with Different Degrees of Induced Swirl



Multilayer nanofiber filter



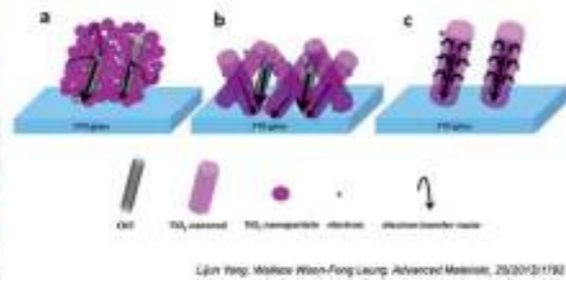
High-performance Nano-Photo-catalyst



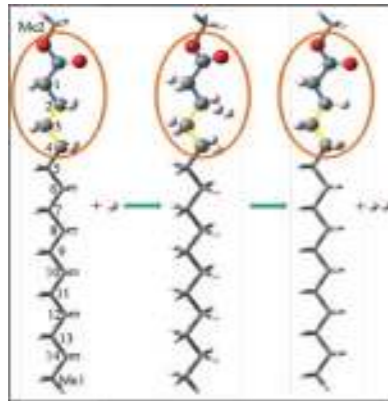
Dye sensitized solar cells (DSSC)



Electrospun TiO₂ nanorods with carbon nanotubes for efficient electron collection in DSSC



Ab initio combustion chemical kinetics of large biodiesel molecules



Investigation of On-road Remote Sensing Vehicle Exhaust Emissions



On-road Vehicular Engine Emissions Measurement and Dispersion Modeling

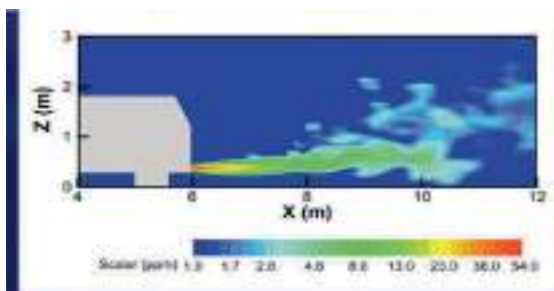


Figure 1 A typical snapshot of scalar concentration distribution from a studied vehicle (Doog and Chan (2006), Atmospheric Environment 40(6), 1104-1116).

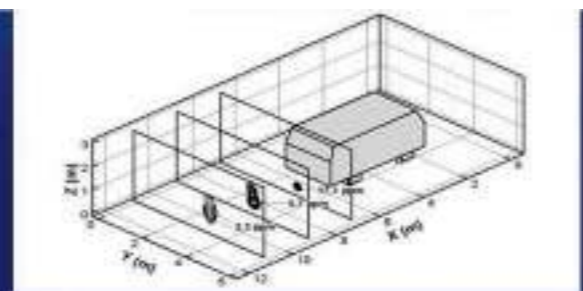


Figure 2 A typical overview of time-averaged scalar concentration contours of the vehicular exhaust jet plume (Deng and Chan (2006), Atmospheric Environment 40(6), 1104-1116).

Consortium for Aerospace Engineering and Aviation Research (CAAR)

The Consortium for Aerospace Engineering and Aviation Research (CAAR) has witnessed a successful third year, showing the strong commitment of ME, PolyU in developing the aerospace and aviation researches. The group has begun to gain international recognition in a number of aspects.

The CAAR members were successful in applying research funds internally and externally in the past year. The CAAR members secured 1 RGC Collaborative Research Fund, 2 ECS project, 1 GRF funded and 6 fundable projects, 1 Hong Kong PDF Scheme projects, 1 ITF projects and 2 research project supported by Chinese state-key laboratories with a total amount of more than HK\$10 million.

During the reporting period, two consultancy services were also provided to the renowned quadcopter manufacturer, DJI Innovations Technology Co., Ltd. by Prof. CY Wen.

The research works carried out by the CAAR members have been shown consistently well, which is evidenced by the large number of quality papers published in the top notch journals in the area, such as AIAA (American Institute of Aeronautics and Astronautics) journal, Journal of Fluid Mechanics, Physics of Fluids, Journal of Acoustical Society of America, Structural Health Monitoring: An International Journal, Nature Materials, Advanced Materials, Physical Review Letters, Carbon, Acta Materialia, Applied Physics Letters, ...etc. Prof. CY Wen was also appointed as an Associate Editor of AIAA Journal, which is well accepted as the most prestigious journal in the aeronautical engineering. This appointment is the recognition of the research excellence of the group.

The CAAR members were actively involved in international scholarly exchange activities. Close liaison with a few renowned international aero /MAE programs has been established during the past year, eg., The Daniel Guggenheim School of Aerospace Engineering at the Georgia Institute of Technology, Center of Excellence for Micro Air Vehicle Research, Wright State University, OH, U.S.A., Department of Aeronautics and Astronautics, National Cheng Kung University, Taiwan, Hokkaido University, Japan, and Korea University, Chinese Academy of Sciences, and Chiba University, Japan, etc.

A student team, supervised by Prof. CY Wen and Dr. HH Ruan, won the second runner-up in the 2015 Taiwan Innovative Unmanned Aircraft Vehicle (UAV) Design Competition (Navigated Flight Category) among 73 participating teams from the universities in different countries and regions. This is the third consecutive year that the PolyU student team won the second runner-up award. The Taiwan UAV competition has now been acknowledged as one of the key UAV events in the world, enjoying the recognition from the community, governmental agencies, universities and industrial partners. The award has led to a successful campaign of publicity for the aero program and attracted the media reports.



Aircraft Components donated by HAECO (Hong Kong Aircraft Engineering Company Limited) and HAESL (Hong Kong Aero Engine Services Limited) in Aeronautical laboratory



Rolls Royce Dart Turboprop Engine RDa.6 donated by HAESL (Hong Kong Aero Engine Services Limited) in Aeronautical Laboratory



PolyU team won the second runner-up in the 2015 Taiwan Innovative Unmanned Aircraft Vehicle (UAV) Design Competition (Navigated Flight Category). 2015/05/17



AIAA Journal

Consortium for Sound and Vibration Research (CSVR)



During the last academic year, the Consortium for Sound and Vibration Research (CSVR) continued its success in various areas related to teaching, research and professional involvement in the general acoustic community. Apart from obtaining competitive research grants (GRF, ITF, NSFC etc.), centre members have been gaining remarkable visibility through their active participation in both local and international events. Together with HKIOA, CSVR has co-organized an one-day Symposium on "Soundscape – sharing a better acoustical environment for Hong Kong" on 30 Sept 2014. In this Symposium, Dr. Tracy Yat Sze Choy delivered a talk under the topic of "Visual Audio Effect in Soundscape" and Prof Li Cheng gave the closing remarks and presented the souvenirs to the speakers. Meanwhile, Dr. Tracy, Yat Sze Choy was also appointed as a Co-chairman of The Hong Kong Institute of Acoustics (HKIOA), Woman in Acoustics Committee in Nov 2014. The committee was launched in 2014 to address the need to provide supportive environment to female members for further professional development through a variety of enrichment programmes and to recognize the contribution of women in acoustic profession.

Through years' effort, CSVR, in joining hand with HKIOA, won the bidding for co-organizing the 46th International Congress and Exposition on Noise Control Engineering (Internoise) in 2017, by beating the strong competitions from Singapore and South Korea. CSVR members will be actively involved in the organization with Prof. L. Cheng served as the Congress general Co-Chair. Meanwhile, CSVR members are serving in the editorial board of some most prestigious journals in their respective areas such as Mechanical Systems and Signal Processing, Ultrasonics, Journal and the Acoustical Society of America and Structural Health Monitoring. Their services to industry has also been evidenced by a few projects obtained during the year and supported by prestigious companies like Huawei, CLP etc.

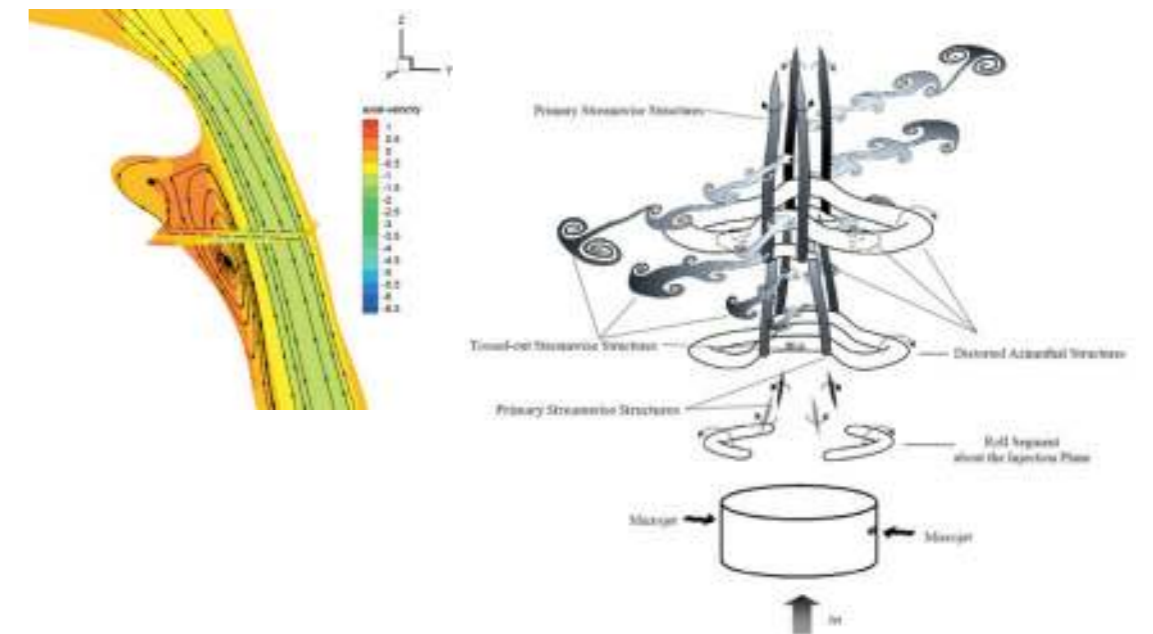


Research Centre of Fluid-Interactions Structure (FSI)



With rapid economic and industrial development in China, India and elsewhere, fluid-related structural vibration and noise problems are widely encountered in many fields, just as they are in the more developed parts of the world, causing increasingly grievous concerns. Turbulence clearly has a significant impact on many such problems. On the other hand, new opportunities are emerging with the advent of various new technologies, such as signal processing, flow visualization and diagnostics, new functional materials, sensors and actuators, etc. These have revitalized interdisciplinary research activities, and the Research Center focuses on biomedical applications, turbulent flows, biofluids, flow-induced vibration, and their control in relation to wings, wind turbines, buildings, cable-stayed bridges, moving vehicles, biomedical engineering, power equipment, heat-exchangers, micro and nano-scale structures, household appliances and products with innovation and technology values. Our research in fluid-structure interaction is world-class and our experimental/computational facilities are at the scientific frontier.

FSI Research Center has organized/co-organized the series symposium on fluid-structure-sound interactions and control (FSSIC). After successfully organized the 2nd symposium on fluid-structure-sound interactions and control (FSSIC) in Hong Kong and Macau in 2013, Dr. Yang LIU and other co-editors have edited the book of "Fluid-Structure-Sound Interactions and Control" which was published by Springer in 2014. This book is the Proceedings of the 2nd Symposium on Fluid-Structure-Sound Interactions and Control which largely focuses on advances in the theory, experimental research and numerical simulations of turbulence in the contexts of flow-induced vibration, noise and their control. Dr. Yang LIU, as co-organizer and co-editor, helped to organize the 3rd FSSIC in Perth Australia in 2015 and is editing the Book which will be published by Springer. The book includes several practical areas for interaction, such as the aerodynamics of road and space vehicles, marine and civil engineering, nuclear reactors and biomedical science etc. One of the particular features of these proceedings is that it integrates acoustics with the study of flow-induced vibration, which is not a common practice but is scientifically very helpful in understanding, simulating and controlling vibration. This offers a broader view of the discipline from which readers will benefit greatly. Due to his excellent work in simulation of cell adhesion and human upper airway, Dr. Yang LIU was invited to deliver a plenary talk on 10th Asian Computational Fluid Dynamics in October 2014, Jeju, Korea. There are currently three GRF projects running in FSI research center.

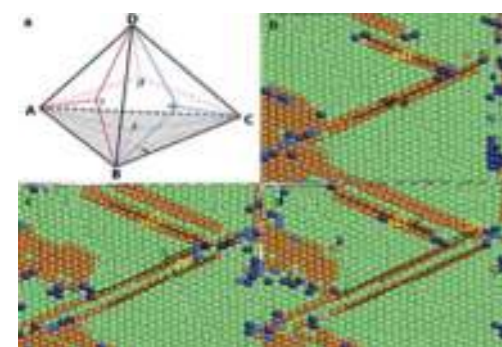


Research Centre for Integrated Product Development (IPD)

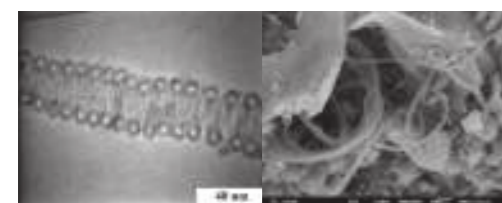
The research activities of the Research Center for Integrated Product Development (IPD) are mainly in the area of advanced materials sciences and engineering covering nanomaterials & technology, materials design & simulation, surface & interface technology, structure-property relationships, biomaterials, functional and energy-related materials, composite materials, smart materials & structures, manufacturing technologies, product design and analysis.

The research works carried out by the IPD members during this period resulted in 83 referred publications in international journals including 41 within top 10% of SCI journal category list and over 20 conference papers/bookchapters. The journals covered a wide variety and included many prestigious journals such as Energy & Environmental Science, Nano Energy, Advanced Functional Materials, Journal of Materials Chemistry A, Nanoscale, Acs Applied Materials & Interfaces, Journal of Power Sources, Carbon, Scientific Reports, Acta Materialia, Organic Electronics, Applied Physics Letters, Journal of Nuclear Materials, International Journal of Plasticity, Journal of Mechanics & Physics of Solids, Journal of Alloys & Compounds, Environmental Science & Technology, Composites Part A-Applied Science & Manufacturing, Composites Part B-Engineering, Materials Science & Engineering A-Structural Materials Properties Microstructure & Processing.

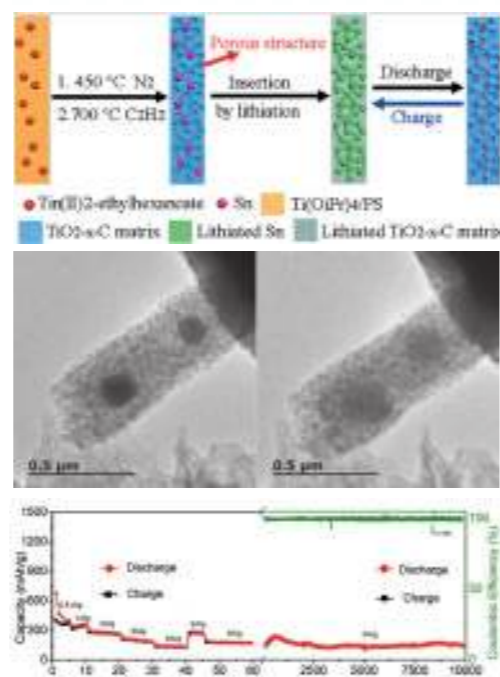
In recognition of their research achievements, 3 awards were granted to the IPD members during the past year – a “Honorable mention paper award” in the 4M Association and the Int Institution for micro-manufacturing conference in Italy (Dr. M.W. Fu); the USQ Research Giant Award on “Nano-composites for Space Applications”, Australia (Prof. K.T. Lau); “Award for Outstanding Contribution to Education” granted by the Global Learntech Congress (Prof. K.T. Lau). In addition, the IPD members were successful in applying research funds externally in the past year. The IPD members secured 3 GRF funded and fundable projects.



Computer simulations showed that deformation twins start to form when twin spacing is larger than 10 nm and that the flow stress of a single crystal copper with nanotwins increases as the twin spacing decreases.



A coiled carbon nanotube Nanoclay-supported nanotube (CN 100432009C)



Inserting Sn nanoparticles into the pores of TiO₂-x-C nanofibers by lithiation results in outstanding electrochemical performance.

The IPD members also actively participated in journal editorial boards including Editor-in-Chief for Composites Communications (Elsevier) and Advanced Materials Research (Trans Tech Publications), Regional Editors for International Journal of Computer Aided Engineering and Technology (Interscience Publisher) and The American Journal of Applied Sciences (Science Publication), and Associate Editors for Science of Advanced Materials (American scientific Publishers), Journal of Nanoscience and Nanotechnology (American scientific Publishers), Journal of Computational and Theoretical Nanoscience (American scientific Publishers), Nanomaterials (Hindawi Publisher), Structural Health Monitoring (SAGA Publications), and International Journal of Smart and Nano Materials (Taylor & Francis). Meanwhile, IPD members collaborated with various external organizations either on an individual basis or on a collective basis. Some major collaborators are Massachusetts Institute of Technology (MIT), Johns Hopkins University, Pennsylvania State University, Sydney University, University of Alberta, Tsinghua University, Zhejiang University, Beijing University of Aeronautics & Astronautics (Beihang University), University of Science & Technology Beijing, Shanghai Jiaotong University, Tongji University, Shanghai University, Harbin Institute of Technology, Harbin Engineering University, Dalian University of Technology. These collaborations resulted in journal publications, consultancy projects and awards of research projects.

On-going Research Projects

The Department has been very successful in recent years in winning research grant income from major sources including industry and the Government.

Externally funded projects

Project Title	Investigators	Source of Funding	Amount Sponsored
Development of a Novel Bimodal Moment Method (BMM) Model Scheme for Solving Complex Aerosol-Related Problems	TL Chan	RGC General Research Fund	HKD 622,000
Investigation of Primary PM and NO ₂ Emissions from On-road Vehicles and Their Impact on the Roadside and Ambient Air Quality in Hong Kong	Z Ning, TL Chan and NYF Lam (The City University of Hong Kong, HK)	Environment and Conservation Fund	HKD 499,000
A Hierarchical Diagnosis Strategy and Integrity Monitoring Technique for Space Structures and Systems	L Cheng, ZQ Su, YS Choy and XJ Jing	Beijing Institute of Spacecraft Environment Engineering, China Academy of Space Technology	HKD 4,026,900
Perturbed Local Dynamic Equilibrium for Structural Damage Identification: Theory and Methodology (由微元動力平衡擾動辨識結構損傷的理論與方法)	L Cheng, WO Wong, JL Guyader (Inst National des Sci Appl. De Lyon, France), S Zhang, C Mao and H Xu	國家自然科學基金	RMB 820,000
Quantification of Window-reveal Isolation for Aircraft Noise Transmission	L Cheng, ZQ Su, YS Choy and XJ Jing	LORD Asia Pacific Limited	HKD 325,000
Vibrating Structures Coupled to Open/Close Acoustic Cavities with Application to Micro-perforated Panels	L Cheng and JL Guyader (Inst National des Sci App de Lyon, France)	RGC General Research Fund	HKD 525,000
Simulation, Monitoring and Control of Vibroacoustic Coupled Systems	L Cheng	State Key Laboratories of Mechanics and Control of Mechanical Structure, NUAU, China	RMB 200,000
Interior Noise and Vibration Control of Spacecraft Enclosure (面向載人航天器密封艙的噪音與振動控制理論方法及應用技術研究)	L Cheng, XJ Jing, YS Choy and ZQ Su	China Academy of Space Agency (CAST)	RMB 1,194,000
Study on the Structural Damage Detection Method Based on Perturbed Local Equilibrium	L Cheng	Matching Grant for China Projects	HKD 206,558
Acoustic Boundary Design Based on a Wavelet-Decomposed Galerkin Formulation	L Cheng	RGC General Research Fund	HKD 717,894
Influence of Biodiesel on Physical and Chemical Properties of Particulate Matter Emitted from A Diesel Engine	CS Cheung and Z Ning (The City University of Hong Kong, HK)	RGC General Research Fund	HKD 525,000
Fan Noise Control in the Duct by Tensioned Membrane Covered with Cavity (帶背腔的薄膜結構用於管道風扇噪音控制的研究)	YS Choy, Y Liu, XN Wang and Q Xi	國家自然科學基金	RMB 250,000
Suppression of Fan Noise in A Short Duct via Vibro-acoustic Coupling	YS Choy and SK Tang (BSE)	RGC General Research Fund	HKD 525,000
Acoustic Behavior of Parallel-arranged Perforated Panel Absorber at High Sound Pressure Level	YS Choy	RGC General Research Fund	HKD 525,000
Online Sound Sources Identification for Space Vehicles	YS Choy, L Cheng, ZQ Su, XJ Jing and SK Tang (BSE)	Beijing Institute of Spacecraft Environment Engineering, China Academy of Space Technology	HKD 600,000
Research on the Ducted Fan Noise Control by Membrane Backed with Cavity	YS Choy	Matching Grant for China Projects	HKD 62,975

Project Title	Investigators	Source of Funding	Amount Sponsored
Investigation on Ductile Fracture Behavior and Ductile Fracture Defects in Micro-scale Plastic Deformation	MW Fu	RGC General Research Fund	HKD 525,000
Squeezing Superplastic Forming of Bulk Metallic Glasses for Fabrication of Electrical/Electronics Components	MW Fu	Innovation and Technology Fund	HKD 867,500
Deformation Mechanism Research of H62 Sheet in Eletromagnetic Micro Punching	MW Fu	Fuzhou University, China	HKD 36,000
Mechanical Property and Microstructure Testing of Ultra-high Strength Steel Sheet (DP590, DP780 and DP980)	MW Fu and B Meng	Behang University, China	HKD 123,760
Investigation of Thermal Assisted Microforming of Bio-compatible Ti-alloys	MW Fu	Matching Grant for China Projects	HKD 98,600
Feature Characterization and Fault Detection of Complex-structure Systems Based on Dynamic Response Signals & Initial Development of New Generation Vibration Isolation Technology in Aeronautic Engineering	XJ Jing, L Cheng, WO Wong and RCK Leung	Beijing Institute of Spacecraft Environment Engineering, China Academy of Space Technology	HKD 1,200,000
Modeling, Estimation and Analysis of Complex Nonlinear Systems	XJ Jing and L Cheng	RGC General Research Fund	HKD 575,750
Study on vibration isolation and control methods by exploiting nonlinear benefits (利用非線性特性實現振動隔離和控制的方法研究)	XJ Jing	國家自然科學基金	RMB 800,000
Nonlinear Analysis and Design in the Frequency Domain: Theoretic Basis and Practical Methods	XJ Jing and L Cheng	RGC General Research Fund	HKD 877,894
Exploration of The Most Feasible Sustainable Green Fuel: Biogas Enriched with Hydrogen	CW Leung, CS Cheung and ZH Huang (Xi'an Jiaotong University, China)	RGC General Research Fund	HKD 670,500
Novel Wave Functional Materials for Manipulating Light and Sound	RCK Leung	AoE Collaborated Project	HKD 300,000
Novel Acoustic Metamaterial Liner Technology for Low Frequency Ventilation Noise Absorption	RCK Leung, GCY Lam and ZY Yang (The Hong Kong University of Science and Technology, HK)	Innovation and Technology Fund	HKD 1,116,367
Passive Control of Train-Tunnel Interaction Aeroacoustics in High-Speed Railway	RCK Leung	RGC General Research Fund	HKD 706,195
高升力翼型氣動噪聲及其降噪方法研究	RCK Leung	機械系統與振動國家重點實驗室開放課題	RMB 150,000
Innovative Design and Optimization Methodology for Product Centrifugal Blower Noise	RCK Leung, A Law (Raymond Industrial Limited, HK), WQ Gong (Xi'an Jiaotong University, China) and YW Wong	Innovation and Technology Fund	HKD 436,817.8
Innovation in Wound Dressing for Improved Wound Healing with Minimized Infection	WWF Leung	Innovation and Technology Fund	HKD 879,661
Loading and Cleaning of A Nanofiber Depth Filter for Capturing Submicron Aerosols	WWF Leung	RGC General Research Fund	HKD 725,000
High-performance all solution processing pervoskite-based solar cells with TiO ₂ /CNT nanofiber scaffold	WWF Leung and LJ Yang	Innovation and Technology Fund	HKD 1,217,361
Hydro-mechanical Properties of Fluid-structure Interaction Problems	Y Liu	Jiangsu University, PR China	HKD 315,000
Active Drag Reduction of a 3D Generic Car Model Using A Combination of Steady and Unsteady Actuations	Y Liu, XJ Jing and Y Li (Institute of Low Speed Aerodynamics, China)	RGC General Research Fund	HKD 930,425

Project Title	Investigators	Source of Funding	Amount Sponsored
Closed-loop-controlled Turbulent Boundary Layer based on Local Surface Oscillation	Y Liu, XJ Jing, Y Zhou (Harbin Institute of Technology, China) and WJ Li (The Chinese University of Hong Kong, HK)	RGC General Research Fund	HKD 922,600
Effect of Vasomotion on Efficient Flow Delivery in Microvascular Network	Y Liu and XY Luo (University of Glasgow, UK)	RGC General Research Fund	HKD 525,000
Formation and Fracture of Zirconium Hydrides under Temperature Transient and/or Gradient (溫度變化和溫度梯度下結合金中氫氧化物的形成和斷裂)	SQ Shi, GP Zheng, MJ Hao, NN Li and ZH Xiao	國家自然科學基金	RMB 800,000
核電站蒸汽發生器管道材料的應力腐蝕開裂的防護	SQ Shi	深圳市生物，互聯網，新能源產業發展專項資金基礎研究計劃 - 新能源	RMB 800,000
Formation and Fracture of Zirconium Hydrides under Temperature Transient and Gradient	SQ Shi	Matching Fund for China Grants	HKD 201,520
Development of A Phase Field Modeling Framework for Localized Corrosion Kinetics	SQ Shi, SY Hu (Pacific Northwest National Laboratory, US) and JL Luo (University of Alberta, Canada)	RGC General Research Fund	HKD 525,000
Online Health Diagnosis and Integrity Monitoring for Space Vehicles based on Elastic Waves and Embeddable Sensor Networks	ZQ Su, L Cheng, YS Choy and XJ Jing	Beijing Institute of Spacecraft Environment Engineering, China Academy of Space Technology	HKD 600,000
Trial : Online Health Diagnosis and Prognosis (Online-HD&P) for Train Structures Using a Large-scale Diagnostic Sensor Network	ZQ Su	Innovation and Technology Fund	HKD 859,000
Structural Health Monitoring-oriented Quantitative Characterization of Fatigue Damage Using Nonlinearities of Acousto-ultrasonic Waves: Fundamental Investigation, Algorithm Development and Experimental Validation	ZQ Su	RGC General Research Fund	HKD 525,000
Acoustical Nonlinearity of Structural Fatigue Cracks and Probability-based Characterization and Monitoring (結構疲勞裂紋的非線性波動特征及其概率診斷與監測)	ZQ Su, H Sohn (KAIST, South Korea), H Xu, M Hong, B Wu, JH Wei, BH Wang	國家自然科學基金	RMB 800,000
Characteristics of Damage-induced Nonlinearity of Elastic Waves and Applications to Health Monitoring of Aircraft FRP (損傷誘發彈性波非線性特征的研究及其在飛行器FRP材料健康監測中的應用)	ZQ Su, SF Yuan (Nanjing University of Aeronautics and Astronautics, China)	機械結構力學及控制國家重點實驗室開放課題項目	RMB 200,000
In-situ Sensing and Characterization of Fatigue Damage Using Nonlinearity of Elastic Disturbance Perceived by a Coated CNT-graphene Hybrid Sensor Network	ZQ Su and LM Zhou	RGC General Research Fund	HKD 525,000
An Innovative Smart Sensing Network Coating towards in-situ Acousto-ultrasonics-based Health Monitoring for Engineering Structures	ZQ Su and LM Zhou	Innovation and Technology Fund	HKD 1,589,140
Application of Dielectric Barrier Discharge Plasma Actuators on a Highly Swept Delta Wing	CY Wen	RGC General Research Fund	HKD 670,500
Fragmentation, Vaporization and Combustion of Liquid Fuels in High-speed Flows (液態燃料在高速氣流中的霧化，蒸發和燃燒)	CY Wen	國家自然科學基金	RMB 900,000
JF-12激波風洞六分量測力高精度數據採集系統研製	CY Wen	中國科學院力學研究所	RMB 500,000
Design of Innovative Flapping Micro Air Vehicle	CY Wen, XJ Jing and PGG Huang (Wright State University, USA)	Innovation and Technology Fund	HKD 1,311,119
Experimental Investigation on Flow Instabilities of a Miscible Magnetic Droplet in a Hele-Shaw Cell	CY Wen	RGC General Research Fund	HKD 338,800

Project Title	Investigators	Source of Funding	Amount Sponsored
A Unique Multipurpose Transonic-to-Hypersonic Ludwig Tube Facility for Study of the High-Speed Aerodynamics	CY Wen, L Cheng, RCK Leung, P Zhang, CH Cheng (ISE), LX Huang (The University of Hong Kong, HK), HH Qiu (The Hong Kong University of Science and Technology, HK) and K Xu (The Hong Kong University of Science and Technology, HK)	RGC Collaborative Research Fund	HKD 4,500,000
Experimental Investigation and Replication of Biological Adhesion Structures (多級生物黏附結構的實驗研究和仿製)	H Yao, LL Hu (Sun Yat-sen University, China), XG Lei (Sun Yat-sen University, China), SY Liu (Sun Yat-sen University, China) and Q Ye (Sun Yat-sen University, China)	國家自然科學基金	RMB 450,000
Mechanics of Morphological Optimization of Current Collectors in Li-ion Batteries for Enhanced Adhesion with Si-based Electrode Materials	H Yao and LM Zhou	RGC General Research Fund	HKD 861,450
Exploration of Material Design Principles from the Teeth of Black Carp - A Predator of Shelled Mollusks	H Yao	RGC Early Career Scheme	HKD 763,087
Investigation on the Mechanics of Adhesion between Tubeworm (Hydroids elegans) and Substrata	HM Yao and V Thiyagarajan (The University of Hong Kong, HK)	RGC General Research Fund	HKD 717,894
Ab Initio Chemical Kinetics for Key Reactions in Biodiesel Combustion	P Zhang	RGC Early Career Scheme	HKD 814,000
Theoretical Chemical Kinetics for Pyrolysis and Oxidation of Large Biodiesel Molecules	P Zhang, CK Law (Tsinghua University, China) and XQ You (Tsinghua University, China)	RGC Joint Research Scheme	HKD 400,000
煤油代替模型的裂解化學反應機理研究	P Zhang	中國科學院力學研究所	RMB 150,000
生物柴油燃燒關鍵反應的從頭算化學動力學	P Zhang	深圳市科技創新委員會	RMB 340,000
Dynamics of Binary Droplet Collision under Elevated Gas Pressures	P Zhang	RGC General Research Fund	HKD 525,000
Cryogenic Processing of Bulk Nanostructured Titanium and Titanium Alloys for Medical Implant Applications	GP Zheng	Innovation and Technology Fund	HKD 998,200
應用於生物醫療器械的納米結構純鈦的製備及其變形機制的研究	GP Zheng	深圳市科技創新委員會	RMB 200,000
Development of Hybrid Supercapacitors Using Nanofiber Electrodes	LM Zhou and ZG Lu (South University of Science & Technology of China, China)	RGC General Research Fund	HKD 525,000
Corrosion and Fatigue Damage Monitoring in Large Scale Tubular Structures Using Guided Ultrasonic Waves	LM Zhou, L Cheng, ZQ Su, L Ye (University of Sydney, Australia), F Li (Shanghai Jiao Tong University, China), HG Li (Shanghai Jiao Tong University, China) and G Meng (Shanghai Jiao Tong University, China)	RGC Joint Research Scheme	HKD 688,600
Development of Co-sensitized Solar Cells Based on Anodic Titania Nanotube and Nanorod Arrays	LM Zhou and YB Xie (Southeast University, China)	RGC General Research Fund	HKD 868,694
Manufacturing, Testing and Consulting on Ferroelectromagnetic Composites	LM Zhou	The University of Sydney, Australia	HKD 104,853
Residual Stress Measurement Dedicated to Structural Aeronautical Composite Part with Organic Matrix	LM Zhou and J Lu (The City University of Hong Kong, HK)	Airbus UK Limited	HKD 865,180
納米粒子摻雜光纖塗層材料特性研究	LM Zhou	哈爾濱工程大學理學院	RMB 288,000
新型船用熱塑性複合材料合作研發及應用	LM Zhou	科技部港澳台科技合作專項	RMB 250,000
夾層阻尼，吸聲/承載功能一體化複合材料測試研究	LM Zhou	哈爾濱工程大學船舶學院	RMB 300,000

Projects funded by Central Research Grant

Project Title	Investigators	Amount Sponsored
Modeling of Particle Transport	TL Chan	HKD 189,000
Modeling of Aerosol Dynamics	TL Chan	HKD 150,000
On Propagation Characteristics of Three-dimensional Elastic Waves Guided by Thick-walled Hollow Cylinder and Application to Detection of Damage in Train Axle	L Cheng	HKD 50,000
Detection and Monitoring of Fatigue Cracks in Axles of High-speed Train Bogies Based on Nonlinear Acousto-Ultrasonic Waves and De-centralized Sensing	L Cheng, ZQ Su and YQ Ni (CEE)	HKD 320,000
Damage Detection of Structural Components Based on Local Dynamic Equilibrium with Strong and Weak Formulations	L Cheng, ZQ Su and JL Guyader (Institut National des Sciences Appliquees de Lyon, France)	HKD 189,000
Damage Detection of Structural Components Based on Dynamic Equilibrium with Strong and Weak Formulations	L Cheng, ZQ Su and JL Guyader (Institut National des Sciences Appliquees de Lyon, France)	HKD 150,000
Modeling, Monitoring and Control of Vibroacoustic System	L Cheng	HKD 315,000
Fundamental Investigation on Ignition Characteristics, Kinetic Modeling, and Diesel Engine Performance of Selected Biofuels	CS Cheung and ZH Huang (Xi'an Jiaotong University, China)	HKD 150,000
Correlating Physical and Chemical Properties of Particles Emitted by Motor Vehicles with Ambient Air Particles	CS Cheung and Z Huang (Shanghai Jiaotong University, China)	HKD 168,000
Experimental Investigation and Modeling on the Performance and Emissions of a LPG-Diesel Dual Fuel Engine	CS Cheung, PK Wong (University of Macau) and N Zhi (The City University of Hong Kong, HK)	HKD 150,000
Influence of Biofuels (Biodiesel and Alcohol Blended Fuels) on the Emissions of a Diesel Engine with Emphasis on Particulate Emissions	CS Cheung and Z Ning (The City University of Hong Kong, HK)	HKD 150,000
Flexible Structures in Barriers for Reducing the Impact of Low Frequency Noise	YS Choy and WK Tsui	HKD 189,000
Broadband Flow Through Silencer with Model Actuation on Light Panel	YS Choy	HKD 150,000
Investigation on Ductile Fracture Behavior and Ductile Fracture Defects in Micro-Scale Plastic Deformation	MW Fu	HKD 189,000
The Scientific Rationales for Process Determination, Tooling Design, and Defect Prediction and Avoidance in Micro Component Development via Microforming	MW Fu	HKD 150,000
Experimental & Analytical Investigation on the Size Effects of Micro/Meso-scale Thin Metallic Sheet's Forming Limit Based on the Micro Damage Theory	MW Fu and XM Lai (Shanghai Jiaotong University, China)	HKD 168,000
Investigation on Ductile Fracture Behavior and Stress-induced Defects in Micro-Scale Plastic Deformation	MW Fu	HKD 189,000
Meso/Micro-scaled Forming of Ti-alloys at Elevated Temperature for Biomedical Application	MW Fu	HKD 150,000
Investigation of Undesirable Geometries and Inaccurate Dimensions of Microformed Parts and Development of Their Avoidance Methods	MW Fu	HKD 150,000
Plastic deformation based processing of advanced materials	MW Fu	HKD 315,000
A Novel Integrated Sensor System for Monitoring Motion Errors of Scanning Coordinate Measuring Machines	HK Fung and WO Wong	HKD 189,000
Characterization of Nonlinear Spatio-temporal Behaviors and Its Applications	XJ Jing	HKD 150,000
Nonlinear Analysis and Design in Vibration Suppression Systems: A New Frequency-domain Approach	XJ Jing and L Cheng	HKD 189,000
Design of a New Pneumatic Vibration Isolator	XJ Jing	HKD 50,000
Modelling, Analysis and Design of Nonlinear Spatio-Temporal Systems and Its Application in Sound and Vibration Control	XJ Jing	HKD 150,000
A Frequency Domain Method for Analysis and Design of Nonlinear Systems	XJ Jing	HKD 150,000

Project Title	Investigators	Amount Sponsored
Identification of Switched Nonlinear Systems: A Robust Control Approach	XJ Jing	HKD 80,000
Characterization of Nonlinear Spatio-temporal Behaviors and Its Applications	XJ Jing	HKD 150,000
Key Issues in Nonlinear Analysis and Design in the Frequency Domain	XJ Jing	HKD 150,000
Development of a Smart Composite Wind Turbine Blade Using Embedded Sensor and Actuator Technology	KT Lau, HY Tam (EE), HT Huang (AP) and JP Gyekenyesi (NASA Glenn Research Center, US)	HKD 320,000
A Better Alternative Impinging Flame for Domestic and Commercial Applications	CW Leung, CS Cheung and YS Choy	HKD 189,000
Thermal, Explosion, Burning and Emission Characteristics of an Array of Premixed Flame Jets Burning Liquefied Petroleum Gas Enriched with Hydrogen	CW Leung, P Zhang and ZH Huang (Xi'an Jiaotong University, China)	HKD 150,000
Aeroacoustics of High-lift Airfoil with Trapped Vortex Cavity	RCK Leung	HKD 150,000
Simulation of Realistic Acoustic Environment for Optimal Beamformer Design for Hands-Free Communication Products	RCK Leung, KF Yiu (AMA), SK Lau (University of Nebraska-Lincoln, US) and S Nordholm (Curtin University of Technology, Australia)	HKD 150,000
Supersonic Impinging Flow in Cold Spray Materials Deposition: Analysis of Nonlinear Particle-Flow Interaction and Aeroacoustical Control of Particle Transport	RCK Leung and CH Shek (The City University of Hong Kong, HK)	HKD 158,343
Analysis of Acoustofluidics in Microdevices Using Kinetic Model	RCK Leung, Y Wang (AP), KF Lei (RIPT) and M. Hirschberg (Eindhoven University of Technology, Netherlands)	HKD 180,000
Numerical Modeling of Aeroacoustic Generation by Flow Duct Side-Branched at Various Separations	RCK Leung	HKD 150,000
Low Dimensional Modeling of Duct Aeroacoustics with Multiple Side-Branched	RCK Leung	HKD 150,000
New Acoustic Source Localization Methodology in Realistic Reverberant Sound Fields Using Optimal Broadband Beamformer Design	RCK Leung and KFC Yiu (AMA)	HKD 146,278
Pressure Drop of a Nanofiber Filter	WWF Leung	HKD 50,000
Investigating Loading and Cleaning of a Nanofiber Depth Filter for Capturing Submicron Aerosols	WWF Leung	HKD 189,000
Solid-State Dye Sensitized Solar Cells with High Conversion Efficiency using Electrospun TiO ₂ Nanofiber Photoanode	WWF Leung	HKD 150,000
High Performance Solid State DSSC with Perovskite as Light Absorber	WWF Leung	HKD 153,917
Solid-State Solar Cells with High Conversion Efficiency using Electrospun TiO ₂ Nanofiber Photoanode	WWF Leung	HKD 150,000
Numerical Model Development for Prediction of Silt Sediment of Yellow River at Delta Based on LIDAR Morphological Database	Y Liu, XL Ding (LSGI) and ZL Li (LSGI)	HKD 130,350
Investigating the Role of Stochastic Resonance in Computational Prediction of Upper Airway Surgery	Y Liu, XY Luo (University of Glasgow, UK) and JY Ye (Beijing Tongren Hospital, China)	HKD 189,000
Computational Prediction for the Upper Airway Surgery	Y Liu, LX Huang (The University of Hong Kong, HK), XY Luo (University of Glasgow, UK) and JY Ye (Beijing Tongren Hospital, China)	HKD 119,989
Effect of Head Postion on Flow Characteristics and Air-Airway Structure Interaction in the Upper Airways of Obstructive Sleep Apnea (OSA) Patients	Y Liu and JY Ye (Beijing Tongren Hospital, China)	HKD 150,000
Using Stochastic Resonance to Predict the Outcome of Upper Airway Surgery for OSA Subjects	Y Liu	HKD 150,000
The Mechanism of Electroplasticity and Its Application for Emerging High-performance Alloys	HH Ruan	HKD 150,000

Project Title	Investigators	Amount Sponsored
Towards Predictable Thermoforming of Glass - from Microscopic Understanding to Constitutive Modeling	HH Ruan	HKD 200,000
Nanomaterials and Phase Field Modelling	SQ Shi	HKD 250,000
Phase-field Modeling of Hydride Blisters in Zirconium	SQ Shi	HKD 150,000
Development of A Phase Field Modeling Framework for Corrosion Kinetics	SQ Shi	HKD 150,000
Study on the Electrocaloric Effect of Ferroelectric Materials	SQ Shi	HKD 150,000
Controlled preparation of nanoporous metals and their applications in advanced devices	SQ Shi	HKD 315,000
Quantitative Characterization of Multiple Fatigue Cracks for Structural Integrity Monitoring (SIM) Using Nonlinear Acousto-ultrasonics and Active Sensor Networks	ZQ Su, L Cheng and LM Zhou	HKD 150,000
Modelling Dispersive Properties of Ultrasonic Waves	ZQ Su	HKD 50,000
Nonlinear Acousto-ultrasonics-based Quantitative Identification of Fatigue Cracks in Engineering Structures Using Probability-based Diagnostic Imaging	ZQ Su, L Cheng and LM Zhou	HKD 189,000
Using Nonlinearities of Higher-Order Guided Wave Modes for Detecting Nonlinear Fatigue Damage	ZQ Su	HKD 150,000
Development of A Novel Coated CNT-graphene Hybrid Sensor Network for Elastic-wave-based Damage Identification	ZQ Su	HKD 50,000
Monitoring Fatigue Damage in Axles of High-speed Trains Based on Nonlinear Acousto-ultrasonics	ZQ Su	HKD 315,000
On Energy Harvesting from Open Channel Water Flows Using Self-sustained Oscillating Hydrofoils	H Tang	HKD 200,000
Development of a GPU-based Numerical Framework for Fluid-structure Interaction Problems	H Tang	HKD 100,000
Design, Fabrication and Flight Test of Flapping Micro/Unmanned Air Vehicles	CY Wen and XJ Jing	HKD 400,000
Leading Edge Vortex Flow Control on a Delta Wing with Dielectric Barrier Discharge Plasma Actuators	CY Wen	HKD 380,000
Design Optimization of Multiple Viscoelastic Dynamic Absorbers for Floor Vibration Abatement	WO Wong, J Yuan and TY Ng	HKD 189,000
Design Optimization of a Visco-Elastic Dynamic Absorber for Floor Vibration Abatement	WO Wong, J Yuan and TY Ng	HKD 150,000
Complex Power Flow Control in Vibrating Plates with Dynamic Vibration Absorbers	WO Wong	HKD 150,000
Cross-Modal Vibration Energy Method for Dynamic Force Identification	WO Wong	HKD 150,000
Biomimetic Study on the Reaction Chambers of Bombardier Beetles for Aeronautical Applications: Thermal Resistance and Pulsed Jet Propulsion	H Yao and P Zhang	HKD 157,350
Bio-inspired Investigation on the Mechanics of Indentation-induced Cracking Morphologies in Hard Coatings	H Yao	HKD 50,000
Fabrication of Polymer Nano-forest as a Universal and Releasable Dry Adhesive	H Yao	HKD 200,000
Bio-inspired Optimization of Interfacial Strength in Hybrid Materials	H Yao	HKD 199,999
Active Noise Control in Acoustic Wave Guides (AWGs) (G-YL55)	J Yuan	HKD 150,000
Active Noise Control in Acoustic Wave Guides (AWGs) (G-YM95)	J Yuan	HKD 150,000
Hypergolic Ignition Mechanism of a Novel "Green" Propellant for Aerospace Propulsion: A Density Functional Theory Study of DMAZ/HNO ₃ System	P Zhang	HKD 100,000
Dynamics of Unequal-size Droplet Collision	P Zhang	HKD 450,000
Computational Study on Slotted Swirl Combustor for Application in Gas Turbine Engines	P Zhang	HKD 150,000

Project Title	Investigators	Amount Sponsored
Multi-scale Modeling of Size Effects on Mechanical Behaviors of Metallic Glasses	GP Zheng	HKD 105,000
Experimental and Theoretical Investigations on the Magnetocaloric Behaviors of (Fe, Co) - based Amorphous Alloys	GP Zheng and CT Liu (The City University of Hong Kong, HK)	HKD 150,000
Atomic Structure and Glass Forming Ability of Bulk Metallic Glasses (BMGs)	GP Zheng and CT Liu (The City University of Hong Kong, HK)	HKD 696,000
Atomic-scale Experimental and Simulation Investigations on the Deformation Twinning in Nanostructured Titanium	GP Zheng	HKD 150,000
Multiscale Simulation Studies on the Processing and Mechanical Behaviors of Ultrafine and Nano-size Grained Magnesium Alloys	GP Zheng	HKD 189,000
Experimental Investigation and ab initio Simulation on the Piezoelectricity and Pyroelectricity of Graphene-ferroelectrics Heterostructures	GP Zheng	HKD 150,000
Development of Hybrid Supercapacitors using Nanofiber Electrodes	LM Zhou and YW Mai (University of Sydney, Australia)	HKD 189,000
ZnO and Patterned Nanostructures for Stable and High-efficiency Inverted Organic Solar Cells	LM Zhou and CW Leung	HKD 624,000
All Solid State Quantum-dot-sensitized Solar Cells Based on Solution Processed Inorganic Semiconductors (G-YBDG)	LM Zhou	HKD 150,000
All Solid State Quantum-dot-sensitized Solar Cells Based on Solution Processed Inorganic Semiconductors (G-YBA1)	LM Zhou	HKD 150,000
CdSe QDs sensitized metal sulfide 2D nanosheet solar cells: Fabrication and photoelectric performances	LM Zhou	HKD 315,000
Advanced Composites and Functional Structures	LM Zhou and L Ye (Sydney University, Australia)	HKD 824,000
Thin Layer Elastic Material Characterization Using Ultrasonic Bessel Transducer	J Zhu	HKD 200,000
Two Dimensional Acoustic Rainbow Trapping Metamaterials	J Zhu	HKD 100,000

Projects with Research Student funded by CRG/GRF/ITF/other external grants

Student Name	Project Title	Supervisor
PhD (FT)		
CHAN Yui Ho	Aeroacoustics of Silencing Device in Flow Duct	RCK Leung YS Choy
CHIANG Yan Kei	Aero-acoustics-structural Interactions and Noise Control in the Fan-ducted System	YS Choy, L Cheng, SK Tang (BSE)
FAN Ka Heng	Aeroacoustic-structure Interaction of Flexible Panel Loaded with Unsteady Flow	RCK Leng
FU Jimin	Micro-and Nanotribology of Natural Biomaterials	H Yao, SQ Shi
HE Chong	Mechanics Learned from Natural Bio-mineralized Materials - Teeth of Black Carp and Mollusc Shells	H Yao, SQ Shi
HONG Ming	Structural Health Monitoring-oriented Quantitative Damage Characterization Using Nonlinear Ultrasonic Waves and Active Sensor Networks: Fundamental Analysis, Algorithm Development, and Engineering Applications	ZQ Su, L Cheng, XL Qing (Beijing Aeronautical Science and Technology Research Institute COMAC)
HU Jing	Heterogeneous Nanostructured Composite Electrode Materials for Flexible Supercapacitors	LM Zhou, H Yao
JIANG Zhiyuan	Structural and Ferroelectric Properties of Graphene-ferroelectric Hybridized Structure Materials	GP Zheng
LAM Ka Hei	Development of Low Frequency Duct Aeroacoustic Liner Using Metamaterial Technology	RCK Leung
LAM King Cheong	Properties of Gas Sensors Based on Graphene and Related Materials	SQ Shi
LI Fangfang	Investigation on Forming Process, Formability and Microstructure of the Hot Stamped Parts with Tailored Customized Mechanical Properties of Boron Steel 22MnB5	MW Fu, JP Lin (Tongji University)
LI Qian	Study on the Multi-scale Structure and the Interface Properties of Plant Fiber Reinforced Composites	LM Zhou, Y Li (Tongji University)
LIU Menglong	A Hybrid Evaluation Approach for Hypervelocity Impact Damage in Spacecraft Structures Based on Passive Acoustic Emission and Active Linear/Nonlinear Guided Waves	ZQ Su, L Cheng
LIU Shuyuan	Numerical Simulation of Aerosol Dynamics in Multi-Scale Systems	TL Chan
LIU Tuo	Multi-dimensional Acoustic Rainbow Trapping Metamaterials	J Zhu, L Cheng
LI Weiqun	Mechanics-Based Investigation into the Durability and Reliability of Energy Storage Materials	H Yao, LM Zhou
LI Xiaoyan	Electrospun TiO ₂ Based Nanomaterials for Energy Storage	LM Zhou
LI Yehai	Development of Graphene/Polymer Composites with Enhanced Electrical and Mechanical Properties	KT Lau, A Vyas
LO Kin Shing Kenneth	Perovskite and Dye-Sensitized Solar Cells with Graphene Enhancement	WWF Leung
LU Mingzhen	Simulation of Respiratory Flow in Human Upper Airway Model	Y Liu
MA Hei Lam	Enhancement of Bonding Strength of a Glass Fiber Reinforced Polymer Plate at Cryogenic Condition by Coiled Carbon Nanotubes	KT Lau

Student Name	Project Title	Supervisor
PhD (FT)		
MAK Yi Wah	Chitosan-based Nanofiber Scaffold as Applied to Wound Healing	WWF Leung
MIAO Jing	Combustion, Thermal and Emission Characteristics of Gas-fired Inverse Diffusion Flames Burning Mixed LPG/Hydrogen Fuel	CW Leung, CS Cheung, ZH Huang (Xi'an Jiaotong University)
QADRI Muhammad Nafees Mumtaz	On Energy Harvesting from Open Channel Water Flows Using Passively Oscillating Hydrofoils	H Tang, Y Liu
RADECKI Rafal Zbigniew	Modelling Nonlinearity of Elastic Waves Guided by PZT-Coupled Structure Bearing Damage	ZQ Su, L Cheng
SALDIVAR Heriberto	Study of Inviscid and Viscous Hypersonic Dissociating Flows Over Blunt Bodies Using the CE/SE Scheme	CY Wen
SEID Ka Him	Optimal Control of Noise Generated within Flow Duct Systems	RCK Leung, L Cheng
SHEN Lu	Application of Dielectric Barrier Discharge Plasma Actuators on a Highly Swept Delta Wing	CY Wen
SHI Lisong	Numerical Investigation on Detonation Phenomena with Detailed Chemical Kinetics	CY Wen
SUN Bo	Investigation of Thermal Assisted Microforming Based on the Characteristics of Grains	MW Fu, JP Lin (Tongji University)
SUN Jingxuan	Study on Design and Transitional Flight of a Vertical Take-off and Landing Unmanned Aerial Vehicle	CY Wen
TANG Liling	Exploit Acoustics Black Hole Effect for Vibration Damping and Noise Control	L Cheng
WANG Hong	An Integrated Feature Characterization and Fuzzy Decision System for Fault Diagnosis of Sensor-networked Structures	XJ Jing, L Cheng
WANG Jilai	Investigation of Defect Formation in Micro-forming Process Using Experiments and Numerical Simulations	MW Fu
WANG Kai	A Nonlinear Ultrasonics-based Health Management Technique: from Quantitative Damage Characterization to Residual Life Estimate, with an Application to Sandwich Structures	ZQ Su
WANG Shu	Investigation on Aerodynamics of Airfoil at Low Reynolds Number	Y Liu, Y Zhou (Harbin Institute of Technology)
WANG Song	Self-Hardening/Softening in Metallic Glass Subjected to Cyclic Elastic Pre-Loading	SQ Shi, Y Yang (CityU)
WANG Tiangang	Localization and Characterization of Noise Sources in an Enclosed Space by Microphone Array	YS Choy, L Cheng
WANG Zhibo	Acoustic-structure Interaction in Environmental Noise Control	YS Choy, XJ Jing
WAN Jianquan	An Investigation on Metallurgical Process and Deformation Mechanism of Duplex Stainless Steel	HH Ruan, SQ Shi
WEI Zhilong	Combustion, Thermal and Emission Characteristics of Biogas/Hydrogen Premixed Laminar Bunsen Flame	CW Leung, CS Cheung, ZH Huang (Xi'an Jiaotong University)

Student Name	Project Title	Supervisor
PhD (FT)		
WONG Tsz Ting	Development of a UV-protective Glass Fibre Reinforced Epoxy Composite	KT Lau, WY Tam
WU Di	High-order Numerical Method for Capturing the Aeroacoustic-Structural Interaction of a Flexible Panel	RCK Leung, H Xiao (Northwestern Polytechnical University)
WU Zhijing	Wave Propagation Properties and Dynamic Characteristics in Lightweight New-type Structures	XJ Jing, WO Wong, WH Huang (Harbin Institute of Technology)
XIAO Lanlan	Numerical Simulation of Flow Behaviours of Cells in Microvessel using Dissipative Particle Dynamics	Y Liu, S Chen (Tongji University)
XIAO Zhenlong	Frequency Domain Convergence Criteria of Volterra Series Expansion and the Applications in Nonlinear Analysis and Design	XJ Jing, L Cheng
YIN Qifang	Effect of Mechanical Constraint on the Lithiation of Anode Materials of Lithium Ion Batteries	H Yao, LM Zhou
YU Dehai	Large Eddy Simulation (LES) of Turbulent Expanding Spherical Flames in Bio-butanol Air Mixture	P Zhang, CW Leung
YU Xiang	Sound Absorption by Micro-perforated Panel in Complex Vibroacoustic Environment	L Cheung
ZHANG Dawei	Experimental Investigation on Combustion Instability in a Swirler Combustor with Incoming Flow Perturbation	P Zhang, CW Leung P Zhang, CW Leung
ZHANG Hao	Numerical Study of Ice Accretion on a Circular Cylinder and an Airfoil	CY Wen
ZHANG Zhen	Vibration Loosening Characteristics and Damage Detection in Bolted Composite Joint	ZQ Su, Y Xiao (Tongji University)
ZHU Xuren	Large Eddy Simulation and Experimental Study of Slotted Swirler Combustor with Natural Gas/Synagas Mixtures	P Zhang, CW Leung
ZIAJA Aleksandra	On Propagation Characteristics of Three-dimensional Elastic Waves Guided by Thick-walled Hollow Cylinder and Application to Detection of Damage in Train Axle	L Cheng, ZQ Su

Student Name	Project Title	Supervisor
MPhil (FT)		
CHOY Hung Faat	Loading Behavior of a Multi-layer Nanofiber Depth Filter for Capturing Nano-aerosols	WWF Leung
HAU Wing Yi Curie	Backpulse and Backblow Cleaning of Nanofibrous Depth Filter Loaded with Nanoaerosols	WWF Leung
YANG Haopeng	Precision Fabrication of Biodegradable Mg-Li Based Alloy Microtubes by Superplastic Deformation for Biomedical Applications	MW Fu, S To (ISE)
PhD (PT)		
CHAN Ying Ngai	Soundscape Design and Planning in Hong Kong	YS Choy
LAM Cheuk Yi	Fabrication of Hybrid Solar Cells by Organic-Inorganic Semiconductor Heterojunction Structures	SQ Shi, KL Chan (HKU), J Lu (CityU)
LEUNG Wing Yan	Design and Realization of Structural Materials with High Strength and High Ductility	LM Zhou, SQ Shi, HH Ruan, J Lu (CityU)
LO Chun Kong	Gas-kinetic Methods for High Speed Flow in Slip Regime	CY Wen
WONG Yin Wai	Innovative Design and Optimization Methodology for Product Centrifugal Blower Noise	RCK Leung, WQ Gong (Xi'an Jiaotong University), KY Law (Raymond Industrial Limited)
MPhil (PT)		
LAM Yat Ken	Measurement of Tyre-road Interaction Noise in Urban Environment Using Twin-wheeled CPX Trailer	RCK Leung, WT Hung (CEE)

Research Collaborations

In the year of 2014/2015, the Department has worked hard to establish collaborative research activities with the following educational institutions and organizations:

Queensland University of Technology	Australia
RMIT University	Australia
The University of Queensland	Australia
The University of Sydney	Australia
University of New South Wales	Australia
Research Lab at Kinectrics Inc.	Canada
University of Alberta	Canada
Beihang University	China
Beijing Institute of Technology	China
Bohai University	China
Huazhong University of Science and Technology	China
Institute of Mechanics	China
Chinese Academy of Sciences	China
Chinese Academy of Engineering Physics	China
China Academy of Space Technology	China
China Aerodynamics Research and Development Center	China
China Oilfield Service Limited	China
Chinese Academy of Sciences	China
Chongqing University	China
Donghua University	China
Fuzhou University	China
Harbin Engineering University	China
Harbin Institute of Technology	China
Jiangsu University	China
Liaoning University of Technology C	China
National Center for Nanoscience and Technology	China
Northwestern Polytechnic University	China
Peking University	China
Shanghai Jiao Tong University	China
Shanghai University	China
Shen Zhen University	China
Shenyang Institute of Automation	China
Sichuan University	China

Research Outputs (1 January - 31 December 2014)

South University of Science and Technology of China	China
Southeast University	China
Suzhou Thermal Engineering Research Institute	China
Taiyuan University of Science and Technology	China
Tianjing University	China
Tongji University	China
Tsinghua University	China
Tsinghua University Shenzhen Graduate School	China
University of Science and Technology of China	China
University of Science and Technology Beijing	China
University of Shanghai for Science and Technology	China
Xi'an Jiaotong University	China
Zhejiang University	China
University of Kaiserslautern	Germany
Chinese University of Hong Kong	Hong Kong
City University of Hong Kong	Hong Kong
The Hong Kong University of Science and Technology	Hong Kong
The University of Hong Kong	Hong Kong
Chiba University Japan	Japan
Institute for the development and Quality, Macau	Macau
University of Macau	Macau
Nanyang Technological University	Singapore
Chalmers University	Sweden
National Taipei University of Technology	Taiwan
University of Glasgow	UK
Argonne National Laboratory	USA
City College of New York	USA
Pacific Northwest National Laboratory	USA
Princeton University	USA
The University of Texas at Austin	USA
University of North Texas	USA

Executive Summary

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Total no. of archival publications 221

Patent:

1. JING, X.J., ZHU, X.C. and CHENG, L., "A Magneto-rheological Fluid Embedded Pneumatic Vibration Isolator and Its Design Methods (一種氣動-磁流變液集成型隔振系統)", PR China Patent, (Patent number: 201420094997.7, CN 203717774), 16 July [2014].
2. JING, X.J. and SUN, X.T., "A Passive Nonlinear Isolation System with Multi-Layer Scissor-Like Structure 一種基於X型結構的非線性被動隔振平台", PRC patent (Utility model 實用新型), Patent Number: ZL 2014 2 0497923.8 [2014].
3. SUN, X., WEN, C.Y., UY, C.K. and SUN, J.X., "一種八字軌跡撲翼機構及微型撲翼飛行器", PRC patent (實用新型), Patent Number: 201420776776.8 [2014].
4. SUN, X., WEN, C.Y., UY, C.K. and SUN, J.X., "一種四翼撲翼微型飛行器", PRC patent (實用新型), Patent Number: 201420776776.8 [2014].

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1. ZHOU, Y., LIU, Y., HUANG, L.X. and HODGES, D.H., "Fluid-Structure-Sound Interactions and Control", *Springer Berlin Heidelberg. Book*, DOI: 10.1007/978-3-642-40371-2. ISBN: 978-3-642-40370-5 (Print) 978-3-642-40371-2 (Online) [2014].

Book Chapter

1. LEUNG, R.C.K., FAN, H.K.H. and LAM, G.C.Y., "A Numerical Methodology for Resolving the Aeroacoustic-Structural Response of Flexible Panel", *Flinovia – Flow Induced Noise and Vibration Issues and Aspects*, Springer, Chapter 15, pp.321–342 [2014].
2. LIU, Z.G., LIU, Y. and LU, J., "The Numerical Simulation of Fluid-Structure Interaction on a Simple Cluster in an Axial Flow", in *the book edited by ZHOU, LIU, HUANG & HODGES: Fluid-Structure-Sound Interactions and Control, Springer Berlin Heidelberg. Book*, DOI: 10.1007/978-3-642-40371-2. ISBN: 978-3-642-40370-5 (Print) 978-3-642-40371-2 (Online) [2014].
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4. WU, Y. and TANG, H., "POD Study of a Turbulent Boundary Layer over a Rough Forward-facing Step", in ZHOU, Y., LIU, Y., HUANH, L., HODGES, D.H. (Eds.), *Fluid-Structure-Sound Interactions and Control*, Springer, DOI: 10.1007/978-3-642-40371-2_11, pp.83-88 [2014].
5. WONG, E.T.T., CHAN, M.C. and SZE, L.K.W., "Spreadsheet Modeling of Data Center Hotspots. In K. Mehdi(Ed.)", *Encyclopedia of Information Science and Technology*, Hershey, Third Edition, pp.1207-1219, PA: IGI Global [2014].
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Journal Paper:

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3. YU, X., CHENG, L. and GUYADER, J.L., "On the Modeling of Sound Transmission through a Mixed Separation of Flexible Structure with an Aperture", *J. Acoust. Soc. Am.*, Vol. 135, No. 5, pp.2785-2796 (2014).
4. JI, H.L., QIU, J.H., NIE, H. and CHENG, L., "Semi-active Vibration Control of an Aircraft Panel Using Synchronized Switch Damping Method", *International Journal of Applied Electromagnetics and Mechanics*, Vol. 46, No. 6, pp.879-893 (2014).
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6. ZHOU, J.H., CHEUNG, C.S. and LEUNG, C.W., "Combustion, Performance and Emissions of a Diesel Engine with H₂, CH₄ and H₂-CH₄ Addition", *International Journal of Hydrogen Energy*, Vol. 3, pp.4611-4621 (2014).
7. ZHOU, J.H., CHEUNG, C.S. and LEUNG, C.W., "Combustion, Performance, Regulated and Unregulated Emissions of a Diesel Engine with Hydrogen Addition", *Applied Energy*, Vol. 126, pp.1-12 (2014).
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11. HU, Q., FU, M.W. and ZENG, X.R., "Thermostability and Thermoplastic Formability of [Zr₆₅Cu_{17.5}Ni₁₀Al_{7.5}]_{100-x}RE_x (x=0.25~3.25, RE:Y, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu) Bulk Metallic Glasses", *Mater & Design*, Vol. 64, pp.301-306 (2014).
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14. LIU, H.S. and FU, M.W., "Prediction and Analysis of Ductile Fracture in Sheet Metal Forming; Part I: A modified Ayada Criterion", *Int. J of Damage Mechanics*, on-line (2014).
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17. RAN, J.Q. and FU, M.W., "A Hybrid Model for Analysis of Ductile Fracture in Micro-scaled Plastic Deformation of Multiphase Alloys", *Int. J. of Plasticity*, Vol. 61, pp.1-16 (2014).
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24. LIU, Y., NING, Y.Q., YAO, Z.K. and FU, M.W., "Hot Deformation Behavior of the 1.15 C-4.00 Cr-3.00 V-6.00 W-5.00 Mo Powder Metallurgy High Speed Steel", *Mater & Design*, Vol. 54, pp.854-863 (2014).
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Consultancy Projects

Members of the Department continued to make contributions to be the profession by engaging in high level consultancies for international organizations, government departments, private sector firms and community groups.

Below are some of our clients:

- APAC Intelligence Group Limited 智匯人才交流中心
- ATAL Engineering Limited
- Bissell Asia Development Center (Shenzhen) Ltd.
- Chevalier (Construction) Company Limited
- CLP Power Hong Kong Ltd.
- Customs & Excise Dept., HKSAR
- DJI Innovations Technology Co., Ltd.
- Foshan University 佛山科學技術學院
- Gary Lau & Partners, Solicitors
- Green Island Cement Company Limited
- Guangzhou Vocational College of Technology and Business
- Hong Kong Aero Engine Services Limited
- Hong Kong Productivity Council
- Huawei Technologies Co. Ltd.
- Hubei University of Arts and Science 湖北文理學院
- Intertek Testing Services Hong Kong Ltd.
- Michael Pang & Co. Solicitors
- MTR Corporation Limited
- S.H. Chan & Co.
- Syncrude Canada Ltd.
- Tsang & Lee Solicitors
- The Hong Kong Jockey Club
- Wong, Kwan & Co.
- 渤海船舶職業學院
- 貴州長征開關製造有限公司

Departmental Seminar Series

The Department regularly holds research seminars on a wide variety of topics delivered by distinguished visiting researchers or external invited speakers with the aim of advancing research by exchanging knowledge and ideas within the field of Mechanical Engineering

Date	Speaker/Affiliation	Title
10 July 2014	Prof. K R. Rajagopal Department of Mechanical Engineering Texas A&M University	What is a Fluid and how do we model them?
05 September 2014	Dr. Hui Long Department of Mechanical, Materials and Manufacturing Engineering Faculty of Engineering The University of Nottingham	Recent research progress in conventional spinning at University of Sheffield
05 September 2014	Dr. Hengan Ou Department of Mechanical, Materials and Manufacturing Engineering Faculty of Engineering The University of Nottingham	Metal forming related research at Nottingham
12 September 2014	Dr. Chao-An Lin Professor and Chairman Department of Power Mechanical Engineering National Tsing Hua University	Prediction of Dynamics and Thermal Fields using Immersed Boundary Method with Moving Embedded Object
29 September 2014	Dr. Hideaki Ogawa RMIT University	Starting and Design of Axisymmetric Scramjet Intakes for Hypersonic Airbreathing Propulsion
14 October 2014	Prof. Jian Cao Department of Mechanical Engineering Northwestern University	Flexible Energy-Efficient Manufacturing
28 October 2014	Professor WU Horng Wen Department of System and Naval Mechatronic Engineering National Cheng Kong University	Study on optimal parameters estimation and cell performance of a proton exchange membrane Fuel Cell by flow modification
08 December 2014	金峰教授 航天航空學院 西安交通大學	西安交通大學的輕質多孔材料與結構多功能一體化設計及應用基礎研究進展
10 December 2014	Dr. Liang Hao Research Associate of Mechanical Engineering Electrochemical Engine Center (ECEC) The Pennsylvania State University	Model Developments and Validation studies on Polymer Electrolyte Membrane Fuel Cells
11 December 2014	金峰教授 航天航空學院 西安交通大學	壓電複合結構中彈性波傳播特性分析及其在高性能聲波器件中的應用研究

Date	Speaker/ Affiliation	Title
22 January 2015	張德良教授 中國科學院力學研究所 高溫氣動國家重點實驗室	科普報告：神奇萬能的衝擊波
23 January 2015	Dr. Hao Liu Graduate School of Engineering, Chiba University, Japan Shanghai Jiao Tong University and Chiba University International Cooperative Research Center, Shanghai Jiao Tong University	Bio-inspired mechanical system: from animal locomotion to the cardiovascular system
10 March 2015	Dr. Haimin Yao Mechanical Engineering Department, Department of Mechanical Engineering The Hong Kong Polytechnic University	Nanoindentation: Fundamental Mechanics and Practical Experience
16 March 2015	Dr. R. Liu Department of Mechanical & Aerospace Engineering Carleton University	Development and Performance Characterization of Cobalt-Based Superalloys
23 March 2015	Prof. Chung K. Law Robert H. Goddard Professor of Mechanical and Aerospace Engineering Princeton University	1. Advancing combustion as a transdisciplinary thermal science 2. Engineering the leader: A Princeton/personal perspective
06 May 2015	Prof. Tong-Yi ZHANG Department of Mechanical and Aerospace Engineering Hong Kong University of Science and Technology	The surface eigenstress model and size-dependent Young's modulus and ultimate tensile strength
11 May 2015	Dr. Paul K. Chan Professor Chemistry and Chemical Engineering Department Royal Military College of Canada	CANDU Fuel: Design Improvement Initiatives
21 May 2015	Prof. Ping Cheng Member of Chinese Academy of Sciences, Distinguished Professor of Department of Mechanical Engineering, Hong Kong Polytechnic University Chair Professor of Mechanical Engineering Shanghai Jiaotong University	Recent Advances in Condensation Heat Transfer
29 June 2015	Dr. Jörg Schlüter School of Mechanical and Aerospace Engineering Nanyang Technological University	Simulation of Low Reynolds Number Flows

Departmental Activities



Staff Achievements & Research Development

ME Scholar's research breakthrough for commercialization



The University signed a commercialization and collaboration agreement with Avalon Nanofibre Limited (Avalon) on 23 October 2014 to conduct further research on the nanofibre technology platform developed by Prof. Wallace Woon-fong Leung, Chair Professor of Innovation Products & Technologies, The Department of Mechanical Engineering.

Prof. Leung's research team has been conducting research on the applications of the nanofibre technology platform and filtration/separation technologies for many years. A variety of materials could be potentially used for nanofibre production, and chitosan has been chosen for a specific application, namely, the development of nanofibre face mask. The chitosan based nanofibre offers unique and specific physicochemical properties. The presence of many positive charge groups can provide outstanding feature for filtration, biomedicine, and healthcare applications so as to attract the clusters of negative charges on the surface of viruses and bacteria like common pathogens such as Escherichia coli, and Staphylococcus aureus.

The first commercial grade prototype of nanofibre face mask would be available for evaluation soon, followed by the launch of marketable products within a year. The collaboration is a significant milestone in PolyU's engagement in collaborative research with the industry which maximizes the potential of technology development and the applicability of the new technology.



ME Staff honored a Global Education Award

Followed by the receipt of The University Grant Committee (UGC) Award for Teaching Excellence last year, Prof. Alan KT Lau of The Department of Mechanical Engineering was granted for another prestigious international education award -- "Award for Outstanding Contribution to Education" with the citation of "Profound Contributions to Outcome-based Education through Integration of Research and Industrial Activities for Teaching" bestowed by the Global LearnTech Congress 2014.

Every year, The Global LearnTech Congress recognizes excellence in education – the programmes, projects, tools, strategies, teams or Individuals. The Award focuses on the Best and Innovative use of the existing or new approaches to enhance Learning. The objective at core is benchmarking Educational & Learning practices.

During the past years, Prof. Lau had best used of the results from his research and consultancy projects to develop a wide variety of teaching and learning activities. With the support from both local and overseas industries, a stage-by-stage structured programme provides students a learn-and-apply opportunity in a real-life working context.

Springer Monograph authored by ME Scholar

A monograph, authored by Dr XJ Jing, was published by Springer in the series "Understanding Complex Systems" with the Founding Editor: S. Kelso.

The Springer Series in Understanding Complex Systems series promotes new strategies and paradigms for understanding and realizing applications of complex systems research in a wide variety of fields and endeavors. The series publishes monographs, lecture notes and selected edited contributions aim at communicating new findings to a large multidisciplinary audience.

The monograph authored by Dr Jing is a summary of his research focusing on Nonlinear analysis and design in the frequency domain in the past 10 years. The book addresses fundamental theory and methods related to the analysis and design of nonlinear systems in the frequency domain and presents most of the recent important advances both in theory and applications about the Volterra series approach.



ME Scholar bestowed with international lifetime scientific achievement award

Prof. Wallace Leung, Chair Professor of Innovative Products & Technologies, The Department of Mechanical Engineering, was bestowed with the Frank Tiller Award 2015 by The American Filtration & Separations Society (AFS).

Frank Tiller Award, named in honor of the late Dr. Frank Tiller of University of Houston - the internationally acclaimed "Father of Modern Filtration Theory" and key founding member of the AFS. The Tiller Award highlights scientific merit and recognizes individuals for outstanding lifetime scientific and engineering achievements in the technology of fluid-particle separation. Since its establishment in 1989, AFS will bestow one award per year for a deserving candidate.

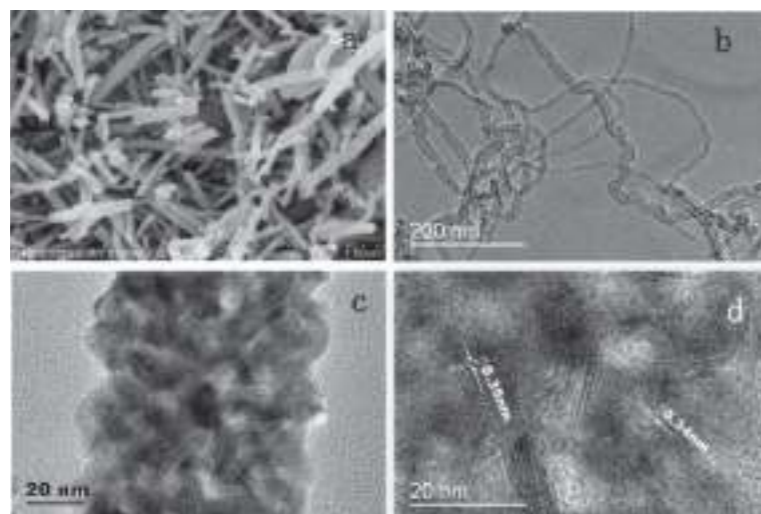
Prof. Wallace Leung has researched separation and filtration for nearly 40 years covering pioneering work in membrane filtration, gas-solid separation, and liquid-solid separation. He has spent 14 years in the academia (over 4 years at MIT and 10 years at PolyU) and 25 years in industry in United States. He is best known for his innovative centrifugal separation and filtration technologies, which have been developed from basic research using analytical, experimental and computational approaches. He has authored two books (McGraw-Hill 1998 and Elsevier 2007) that were widely adopted in the field, 36 United States patents, and numerous papers and book chapters. His technologies have benefited PVC production, water and wastewater treatment, coatings market for making high-quality paper and paint, biopharmaceutical processing, chemical, industrial, food and mineral processing. His

recent research interest on nano-aerosol filtration, using multilayer nanofiber technology which are covered by several issued US patents, and patent-pending nano-photocatalyst technologies, have important applications in control of PM2.5 particulates, gaseous pollutants (VOC, NOx, SOx), and infectious diseases due to influenza (H3N2, H5N7 etc.) and various epidemic viruses (SARS etc.). He is a Fellow of several professional societies, including American Institute of Chemical Engineers, American Society of Mechanical Engineers, American Filtrations and Separations Society, and Hong Kong Institution of Engineers. He has organized the largest, most successful, filtration event ever – the 9th World Filtration Congress, held in 2004 in New Orleans, United States, which sets a high standard for other member countries to follow.



ME Scholar advances nanocomposite technology

Nanofiber technology expert of The Department of Mechanical Engineering successfully developed a platform technology whereby semiconductor nanofibers which are not very charge conductive are made highly conductive by inserting carbon materials, such as carbon nanotubes (CNT) and graphene.



Developed by Prof. Wallace Leung, Chair Professor of Innovative Products & Technologies of The Department of Mechanical Engineering, the invention of "Highly Conductive Nano-structures incorporated in Semiconductor" was recently issued a patent by the United States Patent Office.

With the highly conductive nanofibers, electrons, positive and negative ions can travel along these one-dimensional highways at high speed without getting loss at the boundary of the semiconductor nanofibers, for which recombination of electrons with electrolytes/holes can take place reducing efficiency of the device. There are other attractive properties, such as electron storage, with the carbon nanostructure insert in the nanofibers.

The invention provides a composite with one-dimensional semiconductor nanofibers with highly conductive nanostructures and methods of making these novel composites. For use in Dye Sensitized Solar Cells (DSSC), the composite is able to provide fast charge (electrons and ions) transport, and reduce the rate of electron-hole recombination, ultimately increasing the power conversion efficiency of the DSSC beyond 10% (Yang and Leung, *Advanced Materials*, 25, 1792-1795, 2013). For use in photocatalysis of pollutant gas such as nitric oxide or VOC, the composite can provide fast electrons transport, storage of electrons and large surface area for adsorption and reaction sites of active molecular species taking part in photocatalytic oxidation, providing superior performance as compared to nanofibers without the conductive materials. For use in biological and chemical sensors, the composite can enhance the sensitivity of the surface for biological and chemical sensing purposes. For use in lithium-ion battery, the composite can lower the impedance and increase the charge storage capacity of the battery. There are still a lot of possible applications that can be explored with this breakthrough technology, according to Prof. Leung.

ME Scholar receives Endowed Professorship in Product Design Engineering



Prof. Alan Kin-tak Lau of The Department of Mechanical Engineering was appointed as the incumbent of Alex Wong Siu Wah Gigi Wong Fook Chi Endowed Professorship in Product Design Engineering, donated by Mr Alex Wong and Miss Gigi Wong of King's Flair International (Holdings) Limited.

The Inauguration Ceremony was held on 13 May 2015 at the Jockey Club Auditorium on PolyU campus. Presided over by the Deputy Chairman of Council of the University, Mr Chan Tze-ching, the ceremony saw the presentation of a total of six Endowed Professorships this year to pay tribute to distinguished scholars for their outstanding academic achievements and significant contributions to the community, as well as to demonstrate the support and recognition from the community to PolyU for its research excellence.

With the grant supported under this endowment, Prof. Lau is dedicated to devote his time and effort to setting up applied research projects to convert new technologies into innovative product ideas, and to organize wide range of activities including design competitions, knowledge transfer seminars, cross-faculty design projects and industrial visits to enhance student's learning ability and global outlook. He will also contribute to strengthen the linkages between local industries and the University for the continuous advancement in the area of Product Design Engineering.

Over the years, Professor Lau has been working closely with the local small and medium enterprises (SMEs) to support their product innovation and development through different consultancy and student design projects. Since 2008, he received donations over HK\$ 6M from the industry to support student's teaching and learning activities, and also helped the industry to develop innovative design ideas and high value-added products. His supervised students were being well recognized by the industry and many of them have continuously received design awards in local and international design competitions. Some of them have their own product brands and companies to date.

The Endowed Professorship Scheme, established in 2012, provides philanthropists with the unique opportunity to partner with the University to advance research and academic activities of a discipline of their choice for the betterment of the society.



ME Scholars developed novel testing system for diabetic foot patient

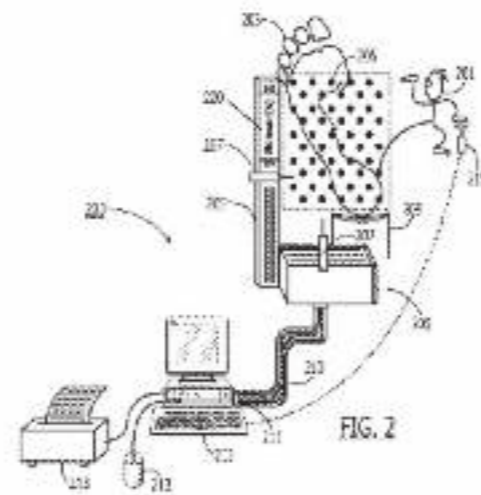
Scholars of The Department of Mechanical Engineering have joined hands to develop a novel testing system for palpation of diabetic foot patient. The invention was issued a patent by the United States Patent Office.

Co-invented by Prof. Wallace Leung, Chair Professor of Innovative Products & Technologies and Prof. Alan Lau, Alex Wong/Gigi Wong Professor in Product Design Engineering, the "Automatic Testing for Palpation of Diabetic Foot Patient" system is developed for assessment of nervous connectivity or nerve degradation for patients suffering from diabetes or neuromusculoskeletal dysfunction.

Manual palpation on the body part and observing extent of bending of the test filament has been conventional practice that is subject to human error and inaccuracy. The downside to this simple assessment is that physicians might miss the correct diagnostic or assessment resulting in unnecessary amputation of patients. This novel technology uses automatic palpation in three-dimensional space for patients, such as diabetic patients, for which nerve degradation is tested. The standard testing can be implemented through a robotic device on all patients and the test can accurately locate systematically the existence of degraded nerves in the foot, or human musculoskeletal system, before they deteriorate.

Diabetic and musculoskeletal dysfunction patients suffer commonly from nerve degradation that needs to be assessed and treated early to prevent the worst case of losing their body part by amputation. This patent discloses an invention of a system for an automated palpation testing of a patient, including the use of a robotic device with an actuating element replacing the filament. The system is useful for testing patients at risk of nerve degradation, such as diabetic and musculoskeletal dysfunction sufferers. The system includes a controller for programming the robotic device to administer the test in a particular pattern, and a storage medium for storing the results of the test. The system allows a more accurate determination of the stage of nerve degradation, as well as being able to conduct a more standardized test because of adopting an automation technology. The 3-dimensional spatial probing allows the probe to follow the complex contour of the human body thus accurately tracing out the degraded nerves. The invention can facilitate comparison between the past and present assessment results (data logged by computer and can be retrieved and compared) so that the condition of the patient can be followed through longitudinally over time, which is practically impossible with conventional practice.

U.S. Patent Apr. 28, 2015 5,000,145 US 9,017,268 B2



Prestigious Innovation Award from European Union



Tripartite research collaboration on "Structural Health Monitoring Technology" developed by China, Poland and Hong Kong has been honoured the 1st Place of The Dragon-STAR Innovation Award 2015.

The Dragon-STAR project consortium honoured the three finalist teams of the Dragon-STAR Innovation Award during the China-EU S&T Cooperation Forum, which took place in Brussels on 28 April 2015. The Dragon-STAR Innovation Award acknowledges successful cases of Chinese-European collaboration, which have resulted in the development of a joint innovation with industrial relevance.

The joint innovation Structural Health Monitoring of Infrastructural Facilities via 3D Laser Scanning Vibrometer is led by Prof. Dr. Maosen Cao of Hohai University (China), with participation from Prof. Dr. Wieslaw Ostachowicz of The Polish Academy of Sciences (Poland) and Dr ZQ Su, The Department of Mechanical Engineering, The Hong Kong Polytechnic University (Hong Kong). It focuses on the development of new methods and technologies for structural health monitoring relying on multiscale dynamics theory. The innovations improve not only the state of the art but also the state of use of multiscale dynamics theory in damage identification, noise suppression and dynamic property characterization. The main novelties of innovations are threefold: (i) formulation of multiscale dynamics concepts, e.g., multiscale shear strain, for creating new principles of structural health monitoring; (ii) establishment of laser scanning-aided multiscale technologies, e.g., multiscale modal curvature, for revealing damage in noisy conditions; (iii) integration of principles, methods and technologies into structural health monitoring systems.

The innovation has received the 1st place of the Award for its high and positive impacts on the competitiveness of Chinese and Polish structural health monitoring technology. The cooperation has also set in place a "visible practice" that can stimulate the participation of European/Chinese researchers in China/EU-funded initiatives, thereby reinforcing future science and technology cooperation.

The Dragon-STAR Innovation Award, sponsored by European Union (EU), aims at delivering visibility to shining examples of Chinese-European successful collaboration cases in order to motivate and stimulate future Chinese-European cooperation. The innovation to be evaluated should be a result of a research or business cooperation, a specific product, process(es), and/or technology(ies) entailing novelties or improvements going beyond of the state-of-the-art. The innovation presented must have industrial relevance (e.g. in form of an industry relevant topic or in form of the participation of an industrial partner).

Student Accomplishments

1st place in The International Collegiate Design and Innovation Competition



A student of BEng(Hons) in Product Analysis and Engineering Design, Department of Mechanical Engineering won the 1st place in The International Collegiate Design and Innovation Competition 2014.

The Competition, held from 7 to 13 August 2014 in Beijing, is designed to model an international student competition with an aim to cultivate innovation and intercultural communications of undergraduate students from the Mainland China and Hong Kong region. Participants in teams of four are required to generate innovative plan under the topic of either Spaceflight or Aviation.

The competition adopted an approach of assigning the project and work requirements only at the onset so that contesting teams were not allowed to prepare any work beforehand but only to come up with a solution and to prepare for a report and presentation in a short duration.

Student LI Chak Hong grouped with two students from Beihang University and one student from The City University of Hong Kong. Their winning project, namely "Weather Control Satellite - We Change the Sky" investigated a new and innovative usage of satellite to change the weather such as precipitation and typhoon. Their Weather Control Satellite system consists of three main systems: cloud locating system, femtosecond laser and attitude adjustment system. By making use of the theory of laser induced water condensation and the data collected from experiment of decay of laser intensity in atmosphere and cloud layer, the

team suggested a possible way to achieve the precipitation control, thunderstorm management and elimination of natural disasters. Their brilliant idea with solid engineering knowledge as well as excellent presentation skills brought them the 1st place in the Spaceflight category of the competition.

This year, more than 60 non-local students from 19 universities, including The Chinese University of Hong Kong and The City University of Hong Kong, to form teams with students from Beihang University and presented their projects in front of the judging panel consisted of professors from Department of Aerospace Engineering and Department of Astronautics of Beihang University.



China Youth Science and Technology Innovation Award



MIAO Jing, PhD Student of The Department of Mechanical Engineering, was awarded the China Youth Science and Technology Innovation Award in the recognition of her outstanding achievements in innovative science. She is one of the only two students from the universities in Hong Kong to receive this highest scientific honor for Chinese Youth this year.

The Award Ceremony was held in the Great Hall of the People in Beijing on 20 August 2014. Organized by the Central Committee, China Youth Federation, the National Federation and the National Work Committee, the Award was established in 2004 to commemorate the 100th anniversary of the birth of Comrade Deng Xiaoping and to complete his better wishes of technological innovation and the promotion of youth development.

This year, the fund supported the selection of 100 university students' scientific and technological innovation projects, 50 middle school science and technology innovation contest demonstration projects, as well as to support the creation of a 13 square technological innovation lab to carry out the Youth Science and Technology Innovation education topics research. Applications were invited from over 200 colleges and universities across the country, more than 5,000 primary and secondary schools with over 200,000 students.

Jing is interested in the research area of Combustion, Emission and Heat Transfer Characteristics of Alternative Fuels. Supervised by Prof. CW Leung of The Department of Mechanical Engineering, she participated in a number of collaborative research projects. Jing is currently in the third year of her PhD research study and is making very good progress. Making use of her findings, Jing has already published two papers in top class international journals and made two presentations at international conferences. Last year, she received a seed funding of HK\$100,000 to support the implementation of her awarded innovative business proposition under the Entrepreneur Stream in PolyU Micro Fund Scheme 2013.

The Poster Prize at an International Symposium

Weiquin LI, PhD student of The Department, was awarded a Poster Prize at the 5th Unilever-RSC International Symposium on Functional Materials Science which was held at the Hong Kong University of Science and Technology on 15 September 2014.

Royal Society of Chemistry and Unilever have collaborated in organizing a series of highly successful multisite international symposia since 2010. The 5th symposium took place at three different cities including Hong Kong with one-day workshop for each city this year. Each one-day workshop included four high-quality invited talks on advanced functional materials including bio-inspired materials and technology, biologically active materials and so on. Student participants were provided opportunity to present their work and communicate with international scholars during a poster session. Based on the assessment by the referees, three best posters were awarded the Poster Prize.



Prestigious International Product Design Award



With his innovative product designs, KWOK Siu Lun Alan, a graduate from BEng(Hons) in Product Analysis and Engineering Design (PAED) programme, was bestowed with The Winner Award and The Honorable Mention Award at the prestigious Red Dot Design Award: Product Design 2014, presented by the Design Zentrum Nordrhein Westfalen in Essen, Germany. His winning products are now collected and displayed in the two Red Dot Museums in Germany and Singapore.

Globally recognized as the "Oscar Academy Award of the field of product design", the Red Dot Design Award: Product Design has emerged as one of the most sought-after quality marks for excellence in product design since 1955. It offers designers around the globe an opportunity of comparing performance and quality on an international level. The competition is open to design-oriented companies and manufacturers of all kinds of industrial products including, but not limited to, furniture, household appliances, consumer electronics, machinery and robotics, vehicles and their accessories, information technology and tools. In 2014, a total of 4,815 products from 53 countries were handed in to the competition. The international jury comprises 40 recognized designers, design engineers, professors and specialized journalists for ensuring the highest degree of objectivity when selecting the winning designs.



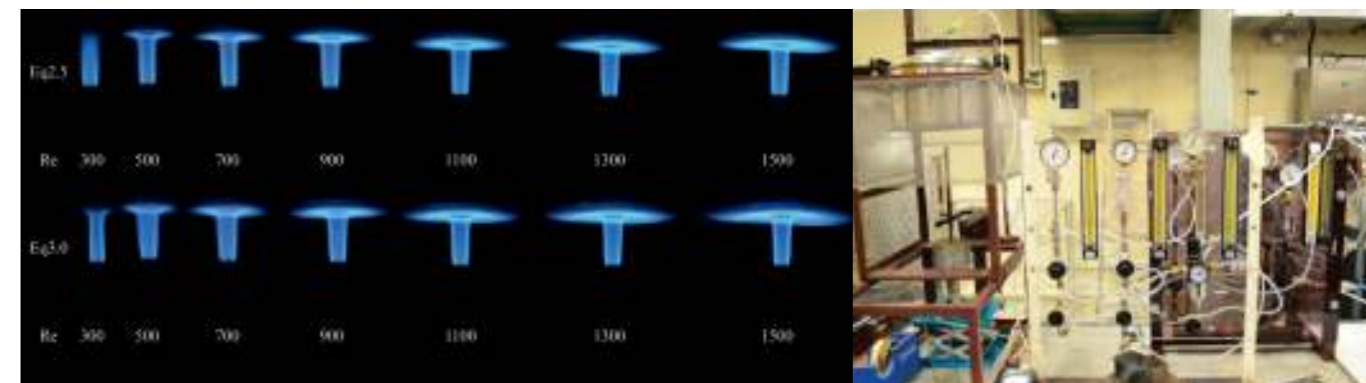
Utilising the principle of the centrifugal force, The Winner Award winning product, namely "Squarish Salad Spinner", dries salad leaves, vegetables and fruit efficiently. It works by means of an innovative gear rack and a coupling mechanism that can be activated with little effort, and prevents irregular spinning of the inner basket. By allowing water to drain at the corners, the square shape of the salad spinner also follows a functional design approach. The notched flat lid allows comfortable handling. In addition, a brake stops the rotation at the push of a button.

The Honorable Mention Award goes to his "Swift Drum Grater" idea which features four stainless steel drums: a slicer, a cheese grater as well as a fine and a coarse vegetable grater. When not in use, the stackable housing serves as a clean storage place for the drums. The product name discloses the principle of expedient use as the drums are easy to insert and remove. Thus, safe use is ensured even with slippery hands. The brand-specific suction base additionally increases a safe stand.

These two international Awards not only marks Alan's great accomplishment but also exemplifies the successful achievement of the Department's educational mission for PAED Programme: to nurture graduates who can synthesize technology and aesthetics in serving customers' needs, starting from generating creative product concepts, through rigorous functionality analyses and engineering design of viable solutions, to their effective realizations up to international quality.



2014 Best Final Year Project



A team of three students of BEng in Mechanical Engineering clinched the Winner (Group Project) in the 2013-2014 Best Final Year Energy Project Competition organized by the Energy Institute (Hong Kong Branch).

The winning project titled "Thermal and Emission Characteristics of Premixed Biogas-fired Impinging Flames", carried out by CHENG Wai Chun, KWONG Lai Yeung and YUEN Wai Ying under the supervision of Prof. CW Leung, is an experimental study to investigate the feasibility of domestic applications of biogas as an alternative gaseous hydrocarbon fuel with the use of hydrogen enhancement technique. With a main focus of examining the effects of Reynolds number and equivalence ratio to the flame stability, thermal performance and air pollutant emissions of the hydrogen/biogas-fired premixed flame with different fraction of hydrogen addition, the project indicates the potential usage of hydrogen-enriched biogas in low temperature heating applications such as domestic heating.



Each year the Energy Institute (Hong Kong Branch) invites all engineering final year students from all universities in Hong Kong to compete for the Best Final Year Project Award with their final year projects in the topic of energy /fuel.

1st Runner-up in IMechE Design Competition

A team of five Mechanical Engineering students placed second in The 4th IMechE Greater China Design Competition held at the South China University of Technology in Guangzhou on 22 March 2015.

YUEN Man Chun, CHAN Wai Ki Mr, NG Hon Chiu, WONG Hiu Ching and WOO Sin Tung all from the BEng in Mechanical Engineering led by Ir KK Lo, Engineer of the Department, have designed and built a "Rocks Collector" that was able to pick up rocks and transport them to and back from the designed spots while surmounting a number of small obstacles.

There were total eight contesting teams representing The Chinese University of Hong Kong, The University of Hong Kong, Hong Kong University of Science and Technology, The Hong Kong Polytechnic University, IVE, University of Macau and South China University of Technology.

The panel of judges selected winners by criteria included design innovation, design methodology, potentials for commercialisation, technical performance of the device prototype, as well as the presentation skills of the contestants.



Best Student Presentation Awards

Weiqun LI and Jimin FU, two PhD students from The Department of Mechanical Engineering, received the Best Student Presentation Awards at the 19th Annual Conference of The Hong Kong Society of Theoretical and Applied Mechanics (HKSTAM) held at the Hong Kong University of Science and Technology on 28 March 2015.

The 19th Annual Conference of HKSTAM 2015 was co-organized by The Hong Kong Society of Theoretical and Applied Mechanics and The Hong Kong University of Science and Technology. The conference topics cover mechanics and its application in all science and engineering disciplines. The one-day conference featured four distinguished lectures and 47 presentations in 8 parallel sessions. Student participants were provided opportunities to present their research work during the presentation sessions. Based on the assessment results by referees, eight best students were awarded the Best Student Presentation Award.



Boeing-CX-HAESL Internship Programme

Under a very rigorous selection process, a BEng in Mechanical Engineering student NGAI Tsz Ki, Henry successfully won over a place for the Boeing-Cathay Pacific Engineering Internship Programme 2015. He will undertake a very intensive one-year engineering training in US and HK in the coming academic year.

The Boeing-Cathay Pacific Engineering Internship Programme is a one-year engineering training programme jointly offered by three of world's renowned aviation companies - The Boeing Company, Cathay Pacific Airways (CX) and Hong Kong Aero Engine Services Ltd (HAESL). Successfully selected intern will undertake an exciting 6-month engineering training in the Boeing Company's commercial aviation development plant in Seattle, USA and then another 6-month intensive training in Cathay Pacific and HAESL.

This internship is highly competitive. Each year, local students pursuing degree study in Mechanical Engineering will be invited to compete for the internship opportunity by going through a rigorous interview exercise. Selection is based on a number of criteria including academic achievement, problem analyzing and solving skills, communication ability, teamwork and partnership ability, and interest in commercial aviation. Henry has performed brilliantly during the group case study working exercise and individual interview to win one place of the internship among 6 finalist candidates from other local universities.

Henry is very excited and glad to be selected. "When I was small, I always wonder why such an enormous metal could fly up to the sky. I am thrilled to join the internship so that I can learn and study deeply from different aspects about aviation. Through this internship, I would equip myself and take the responsibility to contribution to the industry and the society."

2nd Runner-up in UAV design competition



A student team from The Department of Mechanical Engineering was awarded the Second Runner-up (Navigated Flight Category) in the 2015 Taiwan Innovative Unmanned Aircraft Vehicle (UAV) Design Competition among 59 teams from universities and institutes all over the world. Named "PolyU-Hunter", the team was led by Professor WEN Chih-yung and Assistant Professor Dr RUAN Haihui of The Department, with PhD student SUN Jingxuan (team leader), undergraduate students CHAN Pui Chuen, FU Kwan Lun, LAM Chun Ming, NG Ho Lun, TSANG Kit Ying, WONG Ho Yin as members. It is the third time that a university team from Hong Kong was honored in this regional competition organized by National Cheng Kung University (NCKU) since its launch in 2007.

The team was asked to build an unmanned aircraft vehicle from scratch and integrate its design with advanced Global Positioning System (GPS) technology for locating the position of the UAV and that of the missing object. By integrating different systems, "PolyU-Hunter" is controlled by an autopilot (based on Pixhawk) system and can do ISR missions oversight; onboard avionic system, including AAT and OSD, can transfer the real-time video and flight information to the ground station; the image processing system can do targeting and mapping automatically.

On top of the rescue mission, the entrants were graded on five items – the ability to identify the type and quantity of rescue targets, initial coordinates, accurate coordinates, return to base safely and submit final report. The whole mission including submission of the final report must be completed within 40 minutes. The PolyU team is the only team who had found all the missing targets and the coordinate biases were within 1 meter.

Aviation expert Professor Wen Chih-yung is pleased to see that "PolyU-Hunter" designed by PolyU students has successfully demonstrated its capability to fly and meet the challenge of inspecting a wide region under the satellite navigation and identify targets based on real-time video recording. He added that such UAV technology can be used not only in rescue mission but also other applications such as border control.

The UAV competition organized by National Cheng Kung University is well acknowledged as one of the key UAV events in the world with recognition from the community, governmental agencies, universities and industrial partners. It covers five categories: Fundamental Design (Engine), Fundamental Design (Motor), Advanced Design, Navigated Flight and Flapping Wing Vehicle. The competition was held on NCKU campus in Southern Taiwan from 15 to 17 May 2015.



Department & Scholarly Activities

ME organizes a Dinner Talk on Advanced Composites for Industry



In response to the increasing needs in up-to-date knowledge and the applications of advanced composites materials, The Department organized a Dinner Talk on PolyU campus on 11 August 2014.

Themed "Lightweight Advanced Composites for Engineering Industry", the Dinner Talk aimed at providing up-to-date knowledge on the properties, manufacturing processes and the long-term structural health condition and applications of advanced composites to the industry.

Prof. Alan Lau of The Department of Mechanical Engineering, speaker of the Talk, revealed that many engineers today do not have in-depth understanding on the properties and characteristics of advanced composites though the diverse use of advanced composites in industry has become prevalent.

Followed by the opening address delivered by Ir Daniel Cheng, MH and JP, Deputy Chairman of The Federation of Hong Kong Industries and Managing Director of Dunwell Enviro-Tech (Holdings) Limited, Mr. Xie Wen, Executive Director of China Singyes Solar Technologies Holdings Limited gave a welcoming remark on the evening.

Supported by Singyes Engineering (HK) Company Limited, The Department of Mechanical Engineering held a Dinner Talk at Staff Club of PolyU. More than 100 senior executives and engineers of the industry and representatives of engineering-related associations attended the Talk.



The 4th East Asia Mechanical and Aerospace Engineering Workshop



The 4th East Asia Mechanical and Aerospace Engineering Workshop hosted by the Department was held from 24-25 Oct 2014 on campus.

In view of the increasing demand in both manpower and technological know-how in the area of mechanical and aerospace engineering, this workshop served as a platform for academics to discuss about the recent advance on mechanical and aerospace engineering research and to promote inter-institutional collaborations among Hokkaido University, Korea University, National Cheng Kung University (NCKU) and PolyU.



The main theme this year was Aerospace Engineering, with two sub-categories -Thermal-fluids science and Solid mechanics, dynamics & control for the aerospace applications.

Prof. Alex Wai, Vice President (Research Development), PolyU delivered the welcoming address in the opening ceremony of the Workshop on 24 Oct morning. Prof. Li Cheng, Workshop Chairman and Chair Professor of The Department of Mechanical Engineering, PolyU commented that the Workshop provided an ideal platform not only for academics from the four universities to exchange ideas and views, but also for research students to mingle together and to exchange their learning and research experiences.



The East Asia Mechanical and Aerospace Engineering Workshop is an important event in the areas of mechanical and aerospace engineering in East Asia. Previous workshops were held in Korea, Taiwan and Japan respectively. The main participating universities all have long reputation in the mechanical and aerospace engineering in East Asia as well as worldwide.

Staff Retreat 2015

The Department held its annual departmental staff retreat on 6-7 January 2015.



During the retreat, staff members had a fruitful and lively discussion on academic programmes development, research related matters and future policies on fund matching.

A team building activity was organized at the end of the retreat. Participants were divided into teams and members of each team were required to work together to assemble a remote-controlled micro air vehicle to complete some designated missions. This activity allowed colleagues to interact and cooperate closely and hence to further develop team spirits and promote a harmonious working life among members of the Department.



Department Alumni Mentorship Dinner 2014/2015



The Department organized the Alumni Mentorship Dinner 2014/2015 on 16 January 2015.

Over 160 final year students of BEng(Hons) in Mechanical Engineering, BEng(Hons) in Product Analysis and Engineering Design and Double Degree Programme in Business Administration and Engineering treasured the opportunity to interact with and learn from 72 invited Alumni Mentors through this meaningful event.

In the view to facilitate the educational, social and personal growth of students studying the undergraduate programmes, the Department of Mechanical Engineering has established a Mentorship Programme. The Department aims to establish a caring and supportive relationship between industrial partners, alumni and undergraduates, and hence to enhance students' future professional and career development and to empower mentees to face challenges in society.



The Department has invited 72 Alumni Mentors to share their experience and give advice to our final year students. The participation of Alumni Mentor is of tremendous value towards the Department's goal because as graduates, they possess a background of a total learning experience over the years at the Department together with solid working experience in relevant and professional context.

In the welcoming remark, Prof. SQ Shi, Interim Head of Department expressed appreciations towards the support rendered by the alumni and encouraged students to make good use of the event to learn and gain as much as they can from their mentors.



ME Reunion Lunch Gathering

Present and former colleagues from the Department got together on 25 February 2015 at a reunion lunch gathering. During the lunch, they reminisced about the good old days and some shared how they enjoy life after retirement. Everyone enjoyed this fun-filled gathering immensely.



The Mechanical Engineering Students' Society (MESS) Annual Dinner



The Mechanical Engineering Students' Society (MESS) held its Annual Dinner on 27 January 2015 at The Cityview Hotel.

105 participants including Prof. Timothy W. Tong (President of PolyU), Prof SQ Shi (Interim Head of ME Department), Dr WK Yau (Chairman of Mechanical and Marine Engineering Alumni Association), Professors, Alumni and Students attended this fun-filled and meaningful occasion.

The annual dinner did not only offer an opportunity for guests and students to exchange their ideas on diverse topics, such as future career development and difficulties in studies, but also to strengthen the bonding among University, students and alumni.

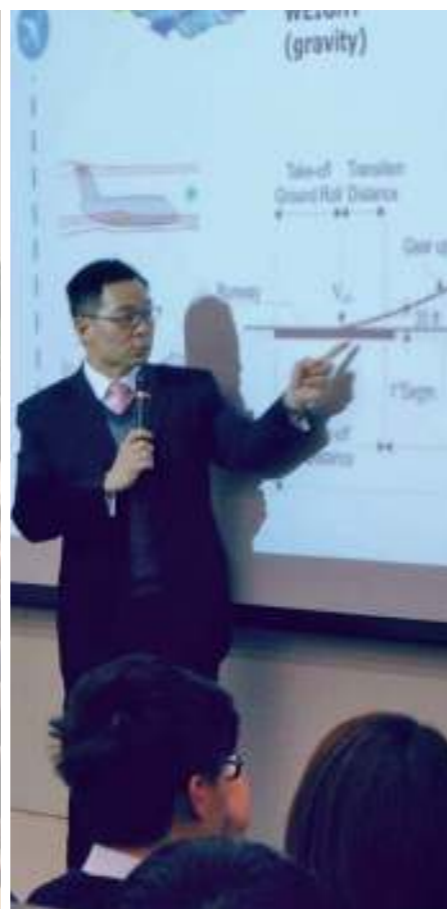


ME hosts seminar on Airport Runway Design and Operation

On 12 March 2015, the Department hosted a public seminar on the topic of "Risks or Opportunities? Examining Runway Design and Operation" on PolyU campus. The seminar attracted over 380 participants from industry, government bodies, university and secondary school students as well as the general public.

As a knowledge transfer platform, the seminar is purposed to introduce the airport runway design from an Engineering perspective, and to enhance the understanding of the constraints on construction of a new runway and its air traffic movement figures.

The speaker Prof. Alan KT Lau of the ME Department shared with audience his in-depth knowledge on the recent aviation development in Asia Pacific region and the relation between characteristics of different airplanes and the airport runway design with considerations of safety issues. Some technical factors influencing the runway design, such as atmospheric conditions, human factors, types of airplanes, airplane induced turbulent flows, maintenance schedule on the runways, required landing and takeoff distances, locations of handover points, disruption managements and common types of airplane accidents, were also discussed.



Outstanding Alumnus gives talk on Combustion



The Department organized a seminar on "Advancing combustion as a transdisciplinary thermal science" and "Engineering the leader: A Princeton/personal perspective" on 23 March 2015. Distinguished speaker of the seminar was Prof. Chung K. Law, the Robert H. Goddard Professor of Mechanical and Aerospace Engineering at Princeton University. The seminar also marked the 50th anniversary of Prof. Law's graduation from his alma mater – The Hong Kong Polytechnic University.

During the seminar, Prof. Law pointed out the current frontier of combustion science and technology and emphasized the importance of transdisciplinary combustion studies. Prof. Law also inspired the audience by sharing his invaluable personal experience which leads him to be a good researcher and leader.

Chung K. Law is the Robert H. Goddard Professor of Mechanical and Aerospace Engineering at Princeton University. He received the PolyU Outstanding Alumni Award in 2007 and was conferred The Honorary Doctorate of the University in 2012.

His research interests cover various physical and chemical aspects of fundamental combustion phenomena, with applications to propulsion, energy, fuels, and the environment. He is a member of the US National Academy of Engineering (NAE), a fellow of the American Academy of Arts and Sciences (AAAS), the American Association for the Advancement of Science (AAAS), the American Institute of Aeronautics and Astronautics (AIAA), the American Society of Mechanical Engineers (ASME) and the American Physical Society (APS). He is a past president of the Combustion Institute, the director of the Combustion Energy Frontier Research Center sponsored by the US Department of Energy, and the director of the Center for Combustion Energy at Tsinghua University. He has received a number of professional and best paper awards for technical contributions.



Russian Delegation Visit



A delegation of scientists, educators and leaders from the business/industries in the Republic of Tatarstan, Russia, visited the Department on 12 May 2015 to discuss collaborations on automotive and allied industries.

Among the visitors are the Vice Rector from Kazan National Research Technological University, Vice Rector for Engineering of Kazan Federal University, and Director of Kazan National Research Technical University.

Prof. SQ Shi, Head of The Department of Mechanical Engineering, presented the academic and research interests of the department to the visitors and subsequently, the lead representatives from the three universities also introduced their interests as well. There was an open dialog with Q&A between the delegation with the PolyU team as lead by Prof. Shi in conjunction with Prof. Wallace Leung, Chair Professor of Innovative Products and Technologies, and Dr. TL Chan, Associate Professor of ME. Various representatives from the universities and industries as well as Deputy Minister of Economy of the Republic of Tatarstan also expressed their interests and appreciation of the visit.

The meeting had fruitful discussions and has opened doors for future collaborations in education and research in the field of Mechanical Engineering between Hong Kong and Russia.



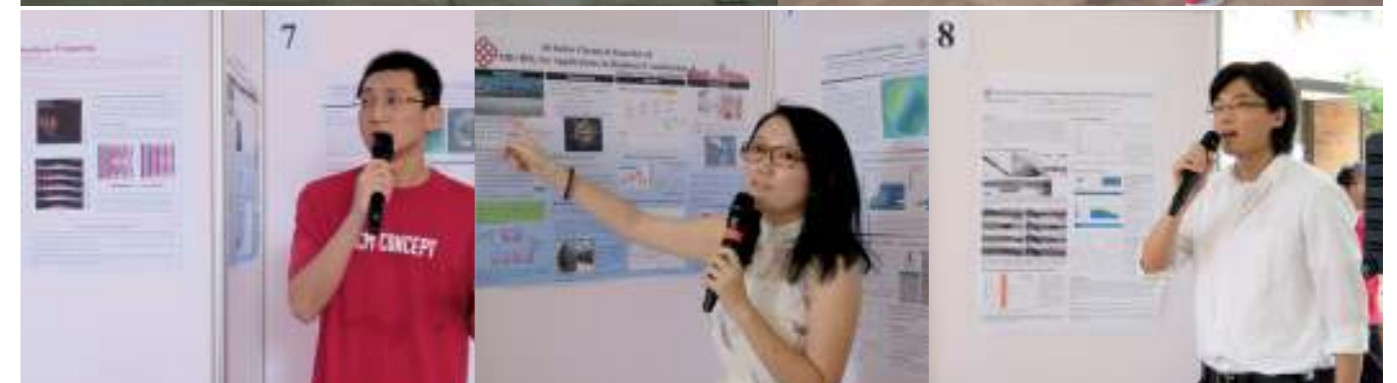
The 1st ME Research Poster Competition



With an objective to provide the Research Postgraduate and Research MSc students of the Department a good opportunity to share their research project results and knowledge with their peers and the PolyU community, the Department organized its first Research Poster Competition on campus which was successfully concluded on 27 May 2015.

A total of 17 posters covering a wide range of topics were displayed. All posters reflect the participants' research findings as well as their new and innovative ideas for successful approaches and/or the potential contribution to the advancement of Mechanical Engineering.

During the competition, participants gave a brief presentation of their research projects to win a vote from attendees including faculty members of the Department and research and MSc students. The posters that received the most votes would win the Champion and Runners-up for cash prizes of HK\$2,000, HK\$1,000 and HK\$500 respectively.



Knowledge Transfer Dinner Talk on Polymers and Lightweight Composites

The Department in collaboration with Sika Hong Kong Limited organized a dinner talk on "Polymers and Lightweight Composites for Engineering Applications" on 2 June 2015.



The use of weather-proof polymers and lightweight composites (carbon fibre/glass fibre reinforced polymers) for civil infrastructure applications has gained much attention due to their high stiffness to weight ratio, non-corrosion properties, possibility of joint-less designs and self-structural health monitor-ability that make structures versatile and safe. With the consideration of environmental consciousness, the use of composites can alleviate the pressure from expensive fuel price and reduce the carbon footprint during transportation, installation and operation stages in all engineering projects.

In view of the aforementioned issues, the Department held a knowledge transfer session to share the characteristics and applications of polymers and fibre reinforced polymer composites especially in the construction and building industry.



The talk attracted over 60 senior managements from different industrial sectors to join, including Gammon Construction Ltd., Electrical and Mechanical Services Department, Swire Properties Ltd., Leighton, Meinhardt Group, Yau Lee Group, Kumshing Construction Co., Ltd., Green Building Council, Jardine Engineering Corporation, Urban Property Management Ltd., Ka Shui International Holdings Ltd., Disneyland, ARUP, CEED.

The dinner talk began with an opening address by Ir Paul Poon, Managing Director of CLP Power Hong Kong Limited. It was followed by sharing from Prof. Alan KT Lau, Department of Mechanical Engineering, PolyU on the differences of using advanced composites for aerospace/ aircraft engineering and construction industries and their key consideration factors in real life practice.

The speaker Mr. Thierry Berset, Head of Corporate Technical Department of Sika, from Germany delivered new technologies and codes to determine the design of composite-strengthened structures for retrofitting and rehabilitation with due fulfilling the fire-proof requirement.

After the talk, an instrumental test was conducted to allow the guests to test the strength and properties of new structures. A training workshop will be arranged in late September to allow engineers to practice on how to make and test advanced composite materials.





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